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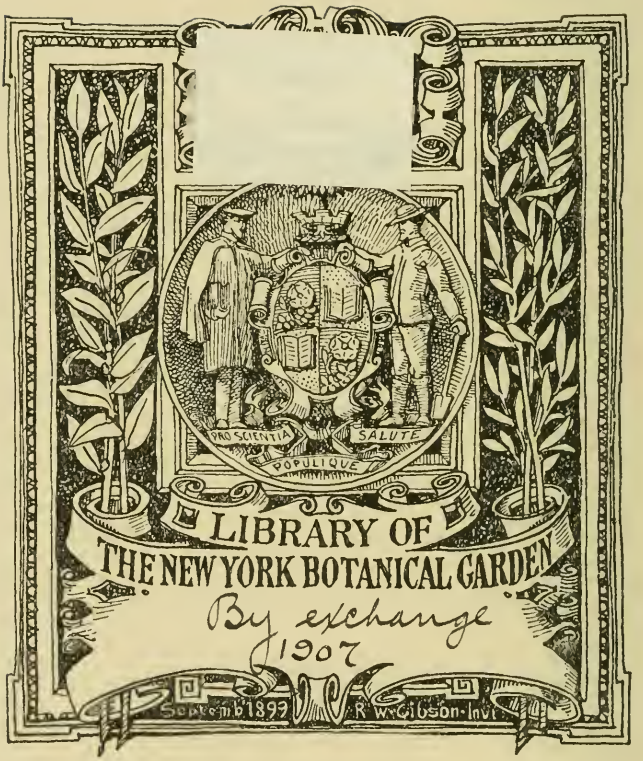
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Samuel B. Green.

PROFESSOR OF HORTICULTURE AND FORESTRY, UNIVERSITY OF MINNESOTA.
Secretary, Minnesota State Horticultural Society in 1890.

Trees, Fruits and Flowers

— OF —

MINNESOTA.

1904.

EMBRACING THE TRANSACTIONS OF THE

MINNESOTA STATE HORTICULTURAL SOCIETY

FROM DECEMBER 1, 1903, TO DECEMBER 1, 1904, INCLUDING THE TWELVE NUMBERS OF THE "MINNESOTA HORTICULTURIST" FOR 1904.

EDITED BY THE SECRETARY,
A. W. LATHAM,
OFFICE AND LIBRARY, 207 KASOTA BLOCK,
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THE MINNESOTA
HORTICULTURIST.

VOL. 32. JANUARY, 1904. No. 1.

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NEW YORK
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GARDEN.

Biography.

PROF. SAMUEL B. GREEN, ST. ANTHONY PARK.

Samuel B. Green was born in Chelsea, Mass., in 1859. His father was ex-Mayor Thomas Green, of Chelsea, who held many important public trusts. He was a wholesale flour dealer in Boston for forty years.

Although born in a city he spent all his summers on a New Hampshire farm, developing early a taste for agriculture. He determined when very young to be a farmer, and his father said if he was to be a farmer he must be an educated one.

At sixteen he entered Massachusetts Agricultural College, but being short of funds in his third year he gave up his college course and for nearly a year worked on a milk and fruit farm, when he returned and graduated with his class, taking the first prize ($50) for the best written and oral examination on agricultural subjects.

Two days after the graduation exercises he became superintendent of the Vine Hill Farm, of West Hartford, Conn. Here he had charge of about seventy head of Jersey and Guernsey cattle, besides other stock, and also a large amount of fruit, employing about nineteen men. After nearly a year's experience in this position, failing to see much of a future for himself in farming in New England his attention was turned to gardening, where he decided there was a little opening.

Mr. Green now commenced his horticultural work, resolved to thoroughly master every detail, for he believed there was more profit in this than in other branches of farming for one with but little capital, and he often changed his employers, several times to work for less money, in order to better learn the various phases of his business. The first season he worked for a farm gardener who raised fruit and vegetables for the Boston market, and then returned

MAY 10 1907

to the agricultural college for a post-graduate course of six months.

The second season he worked for James J. H. Gregory, the veteran seed and vegetable grower, and was occupied the following winter in the greenhouses of Wm. C. Strong, the well known rose grower and nurseryman of Brighton, Mass. The following spring he took charge of the horticultural department at the celebrated Houghton Farm Experiment Station, at Cornwall, N. Y., where he remained over three years. His work here, of raising and selling fruits and vegetables in one of the most famous fruit regions of the country, brought him into acquaintance with the prominent fruit growers and with the New York City fruit markets.

It was here that his natural love for the beautiful in nature was especially developed in the landscape work which he carried on under the direction of Mr. Samuel Parsons, Jr., then in charge of Central Park, N. Y., and perhaps the best known specialist in landscape work in this country at that time, and who had the general oversight of the laying out of the large grounds of the Houghton Farm estate of 1,000 acres.

Here Mr. Green carried on many interesting experiments, chiefly in vegetable gardening. After remaining something over three years, and giving eminent satisfaction, he felt he was not learning fast enough and getting into a rut, and returned to Mr. Strong's nursery as foreman, where he remained a little over a year. From there he went to work as foreman in the Newton Cemetery Nurseries, where he had an excellent opportunity to practice the summer propagation of nursery stock, in which he wished to perfect himself, and in which he was remarkably successful.

From this place he was called to the Massachusetts Agricultural College as superintendent of the horticultural department under his previous instructor, Prof. S. T. Maynard. There he remained nearly two years, attending to the varied duties of the large department which this institution maintains for the instruction of its students and which comprises a commercial nursery, greenhouses and market garden, the sales of which aggregated $5,000 to $7,000 per year.

In the spring of 1888, he accepted the position of horticulturist to the Minnesota Experiment Station, and the professorship of horticulture and applied botany in the Minnesota School of Agriculture. In 1891, when the agricultural college course in the state university was reorganized, he was made full professor of horticulture in the university and later his title was changed to professor of horticulture and forestry. That his work here met with the approval of the

horticulturists of the state was shown by their electing him secretary of the State Horticultural Society. In this capacity he served but one year (1890), as the work was more than he could find time for. He has been for many years and is now a member of the executive boards of the State Horticultural Society, the State Forestry Association and State Forest Reserve Board.

Since coming to the state Prof. Green has written many bulletins and reports from the experiment station. He has contributed liberally to the agricultural press and the reports of the State Horticultural Society. He is also the author of the following books: "Amateur Fruit Growing," "Forestry in Minnesota" and "Vegetable Gardening," all of which books have been revised, in subsequent editions. His latest work, of similar character, is entitled "Principles of American Forestry," a text-book prepared especially for universities and other schools in the country where practical forestry is taught.

Prof. Green is a most indefatigable worker and a ready speaker, but is withal cautious in giving advice, and in reporting his experiments so as not to mislead the inquirer. He has twice been offered the professorship of horticulture in the University of Missouri and once a similar position at Purdue University, in each instance at an increase of salary over that which he now receives, but he prefers to stay where he is, believing that he ought to be worth as much here as anywhere.

Prof. Green's talents are of the versatile order, and he readily adapts himself to any position in which he is placed. As a tutor and disciplinarian in the school, as an experimenter in the field, as an original investigator, as an author, as a student of economic problems, as a Sunday school superintendent, as a writer or off-hand speaker, as a presiding officer—in any position where there is work to be done, or conservative and yet forceful council needed—in all these various phases of life and action he seems equally at home.

As one of the executive officers of this society his influence is most largely felt, and he is doing much in moulding and directing the forces at work within the organization productive of valuable results.

Being still a young man, only forty-four years of age, with continued good health it is easy to predict a useful and successful future for the subject of this sketch. Not the least of his qualifications is that he makes every man his friend, though he is most plain spoken when plain speaking is needed—always a true friend and a loyal supporter of that which is right.

SECRETARY.

OFFICERS IN 1904.

Minnesota State Horticultural Society.

PRESIDENT.

Clarence Wedge.....Albert Lea

VICE-PRESIDENTS.

First Congressional District.....C. W. Merritt, Homer
Second Congressional District.....David Secor, Winnebago City
Third Congressional District.....A. H. Reed, Glencoe
Fourth Congressional District.....Le Roy Cady, St. Anthony Park
Fifth Congressional District.....R. A. Wright, Excelsior
Sixth Congressional District.....W. L. Taylor, Howard Lake
Seventh Congressional District.....D. T. Wheaton, Morris
Eighth Congressional District.....R. H. Pendergast, Duluth
Ninth Congressional District.....Rev. O. A. Th. Solem, Halstad

TREASURER.

A. B. Lyman.....Excelsior

EXECUTIVE BOARD.

(The president and secretary are members ex-officio.)

Wyman Elliot (Chairman), 3 years.....Minneapolis
Frank Yahnke, 3 years.....Winona
John P. Andrews, 1 year.....Faribault
Lycurgus R. Moyer, 1 year.....Montevideo
Prof. Samuel B. Green, 2 years.....St. Anthony Park
J. M. Underwood, 2 years.....Lake City

SECRETARY.

A. W. Latham.....Minneapolis
Office and Library, 207 Kasota Block.

Address business communications and all remittances to the secretary.

STANDING COMMITTEES FOR 1904.

FRUIT LIST.

Prof. Samuel B. Green.....St. Anthony Park
J. P. Andrews.....Faribault
Thomas E. Cashman.....Owatonna

SEEDLING FRUITS.

Wyman Elliot.....Minneapolis
Prof. Samuel B. Green.....St. Anthony Park
O. M. Lord.....Minnesota City

ORNAMENTAL LIST.

C. M. Loring.....Minneapolis
A. W. Hobart.....Minneapolis
J. E. Northrup.....Minneapolis

NOMENCLATURE.

Prof. N. E. Hansen.....Brookings, S. D.
Prof. Samuel B. Green.....St. Anthony Park
Geo. W. Strand.....Taylor's Falls

LEGISLATURE.

J. M. Underwood .....Lake City
Wyman Elliot .....Minneapolis
A. K. Bush .....Dover
Robert Jamison ..... Minneapolis
Prof. W. M. Hays.....St. Anthony Park
A. W. Latham .....Minneapolis

PUBLICATION.

Prof. Samuel B. Green .....St. Anthony Park
Wyman Elliot .....Minneapolis
A. W. Latham .....Minneapolis

GIDEON MEMORIAL FUND.

Wyman Elliot .....Minneapolis
Prof. Samuel B. Green.....St. Anthony Park
A. W. Latham .....Minneapolis

PACKAGES AND MARKETING.

R. A. Wright .....Eureka
Levi Longfellow .....Minneapolis
Thos. Redpath .....Wayzata

ANNUAL MEETING, 1903, MINNESOTA STATE HORTICULTURAL SOCIETY.

REV. C. S. HARRISON, YORK, NEB.

Delegate from Nebraska.

(Clipped from The Nebraska Farmer).

The writer, having been appointed delegate to attend this meeting will give brief report of the proceedings. The enthusiasm and intense interest displayed were beyond praise. The meeting was held in one of the large churches, and at the commencement the audience room was filled.

The writer moved to Minnesota in 1857, and was in that state five years and knows the conditions well. We no more thought of raising apples than oranges. But now the fruit displayed was as fine as I ever saw in Kansas or Nebraska. The present successes show a pluck and perseverence which no other state can show.

Old Boreas seemed the tyrant of those cold regions. He stood in the way with the cutting lash of the north wind in one hand and frozen mercury in the other, and said, "No apples can be grown in my realm." He threw down the gauntlet of defiance, and brave men took up the dare and have "bearded the lion in his den." At first they planted eastern fruits, and orchard after orchard was

swept from existence. Brave Peter Gideon went about in old clothes, saving his money to buy apple seeds to plant by the bushel in the hope that at least one among them might be hardy. Failure followed failure. Then crab seed from one of the northern states gave the Wealthy, and that proved to be one of the most hardy and prolific trees ever evolved. Then the experiments kept on. Seedlings from hardy trees have been planted by the thousands upon thousands, until last fall the seedling apples of Minnesota took the Wilder prize in the American Pomological Society at Boston.

The papers read were of high order. The writers were earnest enthusiasts.

Strawberries succeed well in Minnesota. Either the summers are cooler, or in some way the soil and climate are better adapted—at any rate from the reports Nebraska is in the background. They claimed to have raised them so large that six would fill a quart basket.

The varieties most popular in Nebraska seemed to head the list. Dunlap takes the lead, followed by Warfield, Splendid and other leading varieties.

I was much interested in the discussion regarding mulching. Some proposed to mulch as soon as the ground was frozen enough to bear up the team. But the plan most highly recommended was to let the ground freeze solid and be in no hurry about mulching. It was said the freezing did not hurt, but the freezing and thawing. Wait till the whole bed is frozen solid and then mulch, and the mulching keeps the frost in and retards the blooming so there is no danger from late freezes. There seemed to be a good deal for this plan, and it is the one most generally followed.

I was surprised when reports were given of successful cherry growing.

Up at Duluth, near the great "unsalted sea," fruit of all kinds did remarkably well, and the crops were very large. In short, there seems but a small portion of our vast domain which cannot be invaded by brains and made to raise miracles.

The genial president, Clarence Wedge, one of the successful and enterprising nurserymen of the state, was present. He is a remarkably able and genial man. He was giving off his vitality, ability and cheer to make the meeting a success when he received that cruel stab which entered his soul—a telegram announcing the death of his wife. Mrs. Wedge was a superior woman—she was at the meeting the year before. They have a large family of interesting children. It was a blow that hit us all, and many an eye was dimmed, and many a silent petition went up that the Divine Comforter would visit and comfort that stricken home.

I noted in this meeting a more devout and reverent spirit than usually pervades these gatherings. Men seemed to recognize the thought that they were partners with God, interpreting His plans of mercy to men, and they had a humble and strong reliance on His providence; and back of all their experiments was the Eternal Love with never-failing help and encouragement.

There were many visitors from abroad, Prof. Hansen and Mr. Norby, evergreen expert, from South Dakota, also those from Iowa,

and we were very glad to meet these horticultural experts from other states. The writer was highly honored by cordial appreciation given to his three addresses.

THE GREAT BANQUET.

Why has not our society something of this kind? Tickets were 75 cents, and the proceeds went to memorials for the fallen heroes of horticulture.

Editor E. A. Webb of the Farmer, published in St. Paul, was the host on this occasion, paying the bills. We enjoyed the pleasure of sitting near him. He is an earnest, honorable man, doing all mortal man can to develop his glorious Minnesota—"Land of the sky-tinted waters."

There was touching allusion to the departed, and often the meeting let itself loose with wit and story, and some of the finest talent of the city was secured to lend charm and interest to the occasion. Songs were rendered, recitations of high order, and a young man with his magic gift as a whistler, who with marvelous skill brought all the song birds of summer into the room in the heart of winter. The exercises wound up by an address from President Northrop of the University. It was sublime, solid and inspiring—giving an uplift to us all. He paid glowing tribute to that heroic band who were not working for riches, but giving their talents and lives for their fellowmen and for the state.

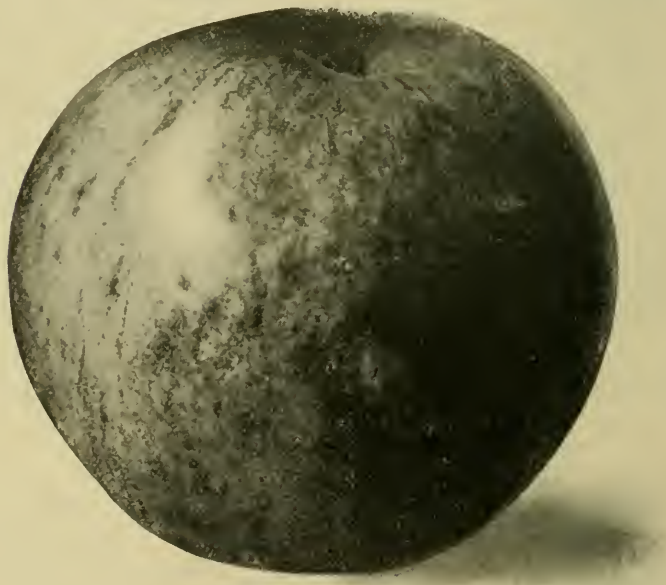
The society has 1,430 members. It was the grandest meeting we ever attended.

ANNUAL MEETING, 1903, MINNESOTA STATE HORTICULTURAL SOCIETY.

A. W. LATHAM, SECRETARY.

The thirty-seventh annual meeting of this society passed into history on the afternoon of Friday, December 4th, the final session coming to an end at five o'clock. The gathering in all respects equalled our most sanguine expectations; in accommodations at the place of meeting, in attendance, in the size of the fruit show and the smoothness with which the program moved along, the meeting was almost an ideal one. The First Unitarian Church, in which the session was held, provided ample accommodations for all of our purposes. The room in which the fruit was displayed was in the basement and so separated from the audience room above, in which the meeting was held, that there was none of the disturbance which usually results from the contiguity of these two rooms. Four rows of tables the whole length of the hall, with tables at every available place against the walls around the room, provided the accommodations needed for a fruit display of over 1,200 plates. The exact figures secured at a careful count showed 1,184 plates of

apples, three of pears, two of quinces, twenty-one of grapes and four pecks of Wealthy apples. Besides this there were some handsome mounds of other varieties, notably Jewell's Winter, which added materially to the attractiveness of the exhibit. The fruit was displayed on these long tables without any accessories in the way of flowers or evergreens to set off the hall, there being no available space for any purpose other than the fruit display. This room was the center of attraction from the beginning to the end of the meeting, the interest of visitors being divided between it and the audience room above. Hundreds of visitors came for the purpose of seeing this fruit show, but after all we think that where one



PERFECT.
A Seedling of the Wealthy that took first premium as Late Winter Seedling.
(See List of Awards.)

person came there should have been 100, for a finer exhibit of fruit has never been made in Minnesota at this time of the year. There should have been a much larger attendance.

There were in all 489 entries of fruit, of which eight were for collections of apples. The most interesting part of the fruit display was the exhibit of seedling apples, for which special premiums had been offered, $100.00 to be divided pro rata amongst the exhibitors of apples of commercial values, a special premium of $25.00 by Chas. M. Loring and a number of valuable premiums by nurserymen of the state. There were forty-two entries for early winter

seedling apples and seventy-six for late seedling apples, and in all 118 varieties of winter seedlings were shown. A. B. Lyman, of Excelsior, received the first prize for the best late winter seedling apple and also for the best early winter seedling apple. The premiums awarded for fruit were divided among some thirty exhibitors, the greatest amount of money paid by the horticultural society to any one person going to J. A. Howard, of Hammond, who received in all from that source $34.00. The whole story of the awards is told in the list which follows this report.

The attendance at the meeting was in every way satisfactory. When the session opened at 10 o'clock Tuesday morning there were in the neighborhood of 300 in the hall, about seventy-five of these being students from the School of Agriculture—and more or less of these students were in attendance during the whole meeting. Tuesday morning's session was devoted largely to small fruits. The meeting opened with a talk on the field culture of strawberries, by A. Brackett, of Excelsior, which was a very practical talk and covered the ground with much thoroughness. It would be impossible in this report to take up and consider the various papers that were at the meeting. There were in all fifty-five papers on the program, nearly all of which were presented in the order as announced. Besides these there were a large number of reports of various officers connected with the association, so that in the neighborhood of eighty people participated in a formal manner in the program, and including those who took part in the discussions the number who participated would be very much larger. The meeting was made especially enjoyable by the character of the room in which it was held, it being arranged in a semi-circular form, with the seats rising one above another towards the back of the room, the light and acoustic properties of the room being most excellent. Scarcely a word was lost to any member during the course of proceedings.

The last day of the session was probably the one of most interest to the fruit growers, who in large part made up the attendance, the subject of apple growing in the orchard and nursery being under discussion. One hundred and fifty to two hundred of earnest fruit growers of the northwest made up the audience and many of these took part in the discussions.

As usual we had present with us a good sprinkling of visitors from the states around us. Prof. C. M. Waldron, from the North Dakota Experiment Station; Prof. N. E. Hansen, from the South Dakota Experiment Station; Mr. P. J. Bentz, of Woonsocket, representing the South Dakota Society; and Mr. A. Norby, of Madison, S. D.; from Iowa, as a representative of Iowa Society came Mr.

A F. Collman, of Corning; Mr. J. B. Mitchell, of Cresco, Ia., representing the N. E. Iowa Society; and Mr. Chas. G. Patten, of Charles City, and E. M. Sherman of the same place, both of whom are life members of our society. Wisconsin was represented by Mr. A. D. Barnes of Waupaca as delegate, and other visitors from there were Mr. A. J. Philips, of West Salem; Mr. Geo. J. Kellogg, of Lake Mills; Secretary J. L. Herbst, of Sparta; Miss G. M. Cairns, of Ellsworth, and our old friend, Ex-Sec'y Oliver Gibbs, who left during the meeting to spend the winter in Florida.

Special mention should be made of the program of the Woman's Auxiliary on Wednesday afternoon, which as usual was said to be the best one of the meeting. On that afternoon also Rev. C. S. Harrison, of York, Neb., delivered an address on the "Forward Movement of Horticulture," which was both inspiring and instructive. He also read before the Woman's Auxiliary a practical paper on the culture of peonies. Mr. Harrison was here at the invitation of the society and was the only representative from abroad from any states not heretofore mentioned. There were two papers on the protection of song birds, and the reading of these and their discussion gave the opportunity for the introduction of some resolutions looking towards the presentation of the matter of the protection of song birds before the state teachers' association which convenes in St. Paul later this month.

Other important resolutions passed at the meeting were: one directed to the board of regents relating to the maintenance of the trial station at Owatonna and looking forward to the establishment of an orchard trial station in the neighborhood of Lake Minnetonka; one calling upon the governor to appoint to fill a vacancy in the board of regents of the State University some one nearly identified with the agricultural and horticultural interests of the state.

The memorial hour was an occasion of special interest on account of the number of deaths of prominent members that have taken place during the past year, ex-President W. W. Pendergast, Mr. E. H. S. Dartt and ex-President J. T. Grimes making up this sad roll. Short addresses were given by S. M. Owen, A. J. Phillips, Chas. M. Loring and Mr. O. C. Gregg. Mr. E. A. Smith played a dirge upon the church organ at the beginning of ceremonies, and at the close Prof. Crosby Hopps rendered an appropriate vocal selection.

Immediately following the memorial hour was the annual election of officers. President Clarence Wedge was re-elected, as were also the treasurer, A. B. Lyman, and Wyman Elliot as a member of the board. The second vacancy on the board was filled by the

election of Frank Yahnke, of Winona. There were a few changes in the list of vice-presidents.

There were a number of absentees whose faces for a long time have been familiar at our gatherings but were detained away by sickness or other matters, among whom may be mentioned the names of O. M. Lord, Martin Penning and Frank Harris. On account of the illness of Mr. Lord the society passed resolutions instructing the secretary to send him a telegram expressing the sympathy of the meeting.

A sad event in connection with this gathering was the calling away of the presiding officer, Mr. Wedge, on account of the sudden death of his wife. This occurred on Wednesday, and Prof. Green by request took the chair, and it being the wish of the vice-presidents of the society and the members generally that he should continue in this position he filled it with distinguished success throughout the remainder of the session.

There were taken at the meeting 145 annual memberships, besides life memberships for the three following persons, G. A. Anderson, Renville; Paul Burtzlaff, Stillwater; and Peter Siverts, of Canby. As an innovation a register was placed in the lobby with the request that members attending should register. There were 155 names inscribed in this register, and considering that so large a proportion of those present did not register this is considered a very good beginning in this direction. It is hoped at future meetings to secure a more nearly perfect registration.

Near the close of the meetings a very important committee was named to take into consideration some plan that will result in the construction of a building especially for the use of the horticultural society. There was manifest a great deal of interest in this, and while no special plan was formulated there is a general feeling that some arrangements should be made by which so large and so strong an organization should have a home of its own. Mr. Chas. M. Loring was appointed chairman of this committee.

This report would be very far from complete without some reference to the annual banquet which was held on Thursday evening at the Young Woman's Christian Association building, in Minneapolis. A bountiful repast was served at half past six and then followed a program, each number of which was carried out as planned with the greatest satisfaction to nearly 125 of our members who were present on that occasion. An item not mentioned in the program was the presentation of a life sized photograph of Mr. Wyman Elliot, to be placed in the office and library of the society. Prof. Green made the presentation address. The total expense of this ban-

quet was paid by Mr. E. A. Webb, of "The Farmer," in order that the proceeds received from the sale of tickets might be used in decorating the horticultural class room at the State Experiment Station with the portraits of eminent men, tablets of the names of such persons, etc., as a fitting accompaniment to the J. S. Harris memorial tablet about to be placed therein.

PROGRAM OF BANQUET.

Toastmaster - - - - - - - - Lycurgus R. Moyer
Grace - - - - - - - - - Geo. J. Kellogg

Supper at 6:30 p. m.

1. The Deeds of the Illustrious Departed a Common Heritage, Prof. Saml. B. Green
   (At this point Mr. E. A. Webb was called and responded briefly.)
2. Song - - - - - - - - - Roy Underwood
3. Some of the Things I Have Not Forgotten - A. J. Philips
4. Recitation - - - - - - - Miss Bessie McKeen
5. Theory and Practice - - Mrs. Florence Barton Loring
6. The Whistling Wonder - - - W. Walter Ellis
7. Incidents in the Early Days of Minnesota Rev. C. S. Harrison
8. The Nobility of Service - - - Prest. Cyrus Northrup
9. Closing Song - - - - Prof. Crosby Hopps

Our members say that this was the best meeting that the society has ever held, but we fully purpose to hold a better one next year, and there will be room for a good many more than were present at this session, and we expect to see them there.

AWARD OF PREMIUMS.

At the Winter Meeting of 1903 of the Minnesota State Horticultural Society.

GRAPES.

Varieties.	Exhibitor.	Premiums.	Amt.
Wilder	Gust Johnson.	First	$ .75
Concord	"	Second	.50
Lindley	"	First	.75
Niagara	"	First	.75
Agawam	"	First	.75
Herbert	"	First	.75
Diamond	"	First	.75
Empire State	"	First	.75
Aminia	"	First	.75
Duchess	"	Second	.50
Brighton	"	First	.75
Lady	"	First	.75
Duchess	H. L. Crane.	First	.75
Delaware	"	First	.75
Lindley	"	Second	.50
Iona	"	First	.75
Concord	"	First	.75

A. BRACKETT, Judge.

FLOWERS.

Table Bouquet	E. Nagel & Co.	First	2.00
Collection of Plants	"	First	5.00

GEO. W. STRAND, Judge.

APPLES KEPT IN COLD STORAGE.

Tetofsky	Dewain Cook.	First	.50
Yellow Transparent	"	Second	.25
Okabena	H. H. Pond.	Second	.25
Peerless	"	First	.50
Wealthy	"	Second	.25

Northwestern Greening.

Borovinca	Thos. Redpath.	First	.50
Gideon No. 6	"	First	.50
Pride of Minneapolis	"	First	.50
Florence	"	Second	.25
Early Strawberry	"	First	.50
Transcendent	"	First	.50
Peter	"	First	.50
Wealthy	"	First	.50
Okabena	Jewell Nursery Co.	First	.50
Wolf River	"	First	.50
Judson	"	First	.50
Grundy	"	First	.50
Hyslop	"	Second	.25
McMahon White	"	Second	.25
Ben Davis	"	Second	.25
Duchess	P. H. Perry.	First	.50
Florence	"	First	.50
Martha	"	Second	.25
Patten's Greening	"	First	.50
Yellow Transparent	"	First	.50
Borovinca	"	Second	.25
Cross	Jewell Nursery Co.	First	.50
Brett	"	Second	.25
Antonovka	"	Second	.25
Phoebe	"	First	.50
Anisim	W. L. Parker.	First	.50
Antonovka	"	First	.50
Haas	"	Second	.25
Kaump	"	Second	.25
White Pigeon	Wm. Oxford.	Second	.25
Golden Russett	"	Second	.25
Gideon	"	Second	.25
Utter	"	First	.50
Fameuse	Ditus Day.	Second	.25
Malinda	"	First	.50
St. Lawrence	"	First	.50
Wolf River	C. E. Older.	Second	.25
Hibernal	Jewell Nursery Co.	Second	.25
Longfield	"	Second	.25

Anisim	C. W. Spickerman.	Second	.25
Martha	"	First	.50
Lyman's Prolific	"	First	.50
Whitney	"	First	.50
E. Strawberry	J. A. Howard.	First	.50
Gen. Grant	"	First	.50
Minnesota	"	Second	.25
Orange	"	First	.50
Whitney	"	Second	.25
Duchess	"	Second	.25
Hibernal	"	First	.50
Ben Davis	"	First	.50
Brett	"	First	.50
Bode	"	First	.50
Borsdorf	"	First	.50
Christmas	"	Second	.25
Charlamoff	"	Second	.25
Fameuse	"	First	.50
Golden Russett	"	First	.50
Grundy	"	Second	.25
Haas	"	First	.50
Judson	"	Second	.25
Kaump	"	First	.50
Longfield	"	First	.50
McMahon	"	First	.50
N. W. Greening	"	First	.50
Peter	"	Second	.25
Phoebe	"	First	.50
Peach	"	First	.50
Rollin's Prolific	"	First	.50
Red Queen	"	First	.50
Romanka	"	First	.50
St. Lawrence	"	Second	.25
Striped Anis	"	First	.50
Utter	"	Second	.25
University	"	Second	.25
White Pigeon	"	First	.50
Walbridge	"	First	.50
Patten's Greening	"	Second	.25
Gilbert	F. I. Harris.	First	.50
Christmas	"	First	.50
Lyman's Prolific	J. R. Cummins.	Second	.25
Minnesota	P. H. Freye.	First	.50
Peerless	"	Second	.25
University	"	First	.50
Northwest Greening	Jewell Nursery Co.	Second	.25
Pear, Kieffer	J. R. Cummins.	First	.50
Flemish Beauty	"	First	.50

J. P. ANDREWS,
W. L. PARKER,
Judges.

APPLES NOT KEPT IN COLD STORAGE.

Haas	G. A. Anderson.	Second	.25
Walbridge	"	First	.50
Ben Davis	H. H. S. Rowell.	First	.50
Antonovka	Fred Zuercher.	First	.50
Duchess	J. O. Weld.	First	.50
Pewaukee	Briggs & Gray.	First	.50
Gideon	"	Second	.25
Longfield	D. T. Wheaton.	Second	.25
Shield's	"	First	.50
Pride of Minneapolis	"	First	.50
Orange	"	First	.50
Hibernal	"	First	.50
Ben Davis	H. H. Pond.	First	.50
Faribault	"	First	.50
Wolf River	P. H. Perry.	First	.50
Okabena	"	Second	.25
Longfield	"	First	.50
Brett	"	Second	.25
Malinda	S. H. Kenney.	First	.50
Pewaukee	"	Second	.25
Peerless	"	Second	.25
Wealthy	W. L. Parker.	Second	.25
Peter	"	First	.50
Repka Malenka	"	Second	.25
Anisim	"	Second	.25
McMahon	"	Second	.25
Northwest Greening	"	First	.50
Patten's Greening	"	First	.50
Kaump	"	First	.50
University	"	First	.50
Fameuse	"	First	.50
Judson	"	First	.50
Antonovka	"	Second	.25
Hyslop	"	First	.50
Brett	"	First	.50

Peter	S. D. Payne.	....Second....	.25
Golden Russett	S. A. Alling.	....Second....	.25
Repka Malenka	H. H. Pond.	....First.....	.50
Malinda	P. Clausen.	....Second....	.25
Minnesota	"	....Second....	.25
Anisim	T. Redpath.	....First.....	.50
Utter	Wm. Oxford.	....Second....	.25
Gideon	"	....First.....	.50
Scott's Winter	Nils Anderson.	....First.....	.50
Walbridge	"	....Second....	.25
Utter	"	....First.....	.50
Peerless	J. Beckley.	....First.....	.50
Lyman's Prolific	J. A. Howard.	....First.....	.50
Minnesota	"	....First.....	.50
Wealthy	"	....First.....	.50
Haas	"	....First.....	.50
Okabena	"	....First.....	.50
Golden Russett	"	....First.....	.50
Ben Davis	"	....Second....	.25
Kaump	"	....Second....	.25
Grundy	"	....Second....	.25
Judson	"	....Second....	.25
McMahon White	"	....First.....	.50
Northwest Greening	"	....Second....	.25
Patten's Greening	"	....Second....	.25
Rollin's Prolific	"	....First.....	.50
Red Queen	"	....First.....	.50
Hibernal	"	....Second....	.25
University	"	....Second....	.25
Hyslop	"	....Second....	.25
Wolf River	F. Yahnke.	....Second....	.25
Fameuse	"	....Second....	.25
Phoebe	J. A. Howard.	....First.....	.50
Grundy	J. R. Cummins.	....First.....	.50
Pears	"	....First.....	.50

J. P. ANDREWS, Judge.

COLLECTIONS OF APPLES.

J. A. Howard	First.....	6.00
Jewell Nursery Co	Second....	$4.00
W. L. Parker	Third.....	2.00

W. L. TAYLOR, Judge.

PECKS OF WEALTHY APPLES.

Jewell Nursery Co	First.....	$3.00
J. A. Howard	Second....	2.00
P. H. Perry	Third.....	1.00

C. E. OLDER, Judge.

SEEDLING APPLES.

EARLY WINTER SEEDLING APPLES.

Gertrude M. Cairns, Ellsworth, Wis	$2.55
"	1.05
Briggs & Gray, Excelsior	1.05
"	1.05
A. B. Lyman, Excelsior	2.75
Christ Fink, Victoria	1.50
H. H. Pond, Minneapolis	1.20
D. C. Hazelton, Cutler	1.05
"	1.80
W. L. Parker, Farmington	1.05
E. S. Bardwell, Excelsior	1.20
D. F. Akin, Farmington	1.95
"	1.50
"	1.05
"	1.20
T. Redpath, Wayzata	1.05
"	1.50
T. E. Perkins, Red Wing	2.65
T. E. Perkins, Red Wing	1.80
W. B. White, Robbinsdale	1.05
"	1.05
J. A. Howard, Hammond	1.20
Dr. J. P. Humes	2.40

LATE WINTER SEEDLING APPLES.

		Judges.
Freeborn Russett	R. A. White, Twin Lakes, Minn.	3.70
	J. S. Decker, Austin, Minn.	3.50
	A. J. Philips, West Salem, Wis.	2.85
Aldrich	Geo. J. Kellogg, Lake Mills.	3.50
(Sweet)	Ore Oredalen, Kenyon.	1.75
Burt	A. B. Lyman, Excelsior.	3.00
Perfect	"	3.95

Christ Fink, Victoria	3.25
"	1.50
D. C. Hazelton, Cutler	2.25
"	1.35
"	3.00
Walter Lundquist, Winthrop	1.75
"	2.25
C. W. Lane, Minneapolis	2.65
W. L. Parker, Farmington	2.85
S. A. Alling, Homer	1.55
D. F. Akin, Farmington	2.45
"	1.35
"	3.25
"	1.10
Ditus Day, Farmington	1.35
Nils Anderson, Lake City	2.65
T. E. Perkins, Red Wing	1.80
J. A. Howard, Hammond	3.05
T. E. Perkins	2.65
D. F. Akin	1.10

SPECIAL PREMIUMS.

Jewell Nursery Co., for best peck of Wealthy apple, to be paid in nursery stock by Andrews Nursery Co., Faribault ..... $ 6.00

J. A. Howard, Hammond, for second best peck Wealthy, to be paid in nursery stock by Andrews Nursery Co., Faribault 4.00

P. H. Perry, Excelsior, for third best peck Wealthy, to be paid in nursery stock by Wm. Sandrock, nurseryman, Houston 3.00

A. B. Lyman, Excelsior, best late winter seedling apple, not sweet, to be paid in cash by Chas. M. Loring, Minneapolis 15.00

R. A. White, Twin Lakes, second best late winter seedling apple, not sweet, to be paid in cash by Chas. M. Loring 10.00

J. S. Decker, Austin, for third best late winter seedling apple, not sweet 5.00

Geo. J. Kellogg, Lake Mills, Wis., late winter seedling apple, not sweet 5.00

A. B. Lyman, Excelsior, best early winter seedling, not sweet; to be paid in nursery stock by Clinton Falls Nursery Co., Owatonna 15.00

Miss Gertrude M. Cairns, Ellsworth, Wis., second best early winter seedling, not sweet, to be paid in evergreens by John Eklof, nurseryman, Cokato 10.00

Ole Oredalen, Kenyon, best sweet winter seedling apple, to be paid nursery stock by Jewell Nursery Co., Lake City 15.00

WYMAN ELLIOT,
SAM'L B. GREEN, Judges.

VARIETIES OF FRUIT ENTERED AT ANNUAL MEETING AND NUMBER OF PLATES OF EACH.

Apples.

Wealthy, 32.
Longfield, 17.
Patten's Greening, 16.
N. W. Greening, 14.
Peerless, 13.
Hibernal, 13.
Okabena, 12.
Anisim, 12.
Ben Davis, 10.
Peter, 9.
Fameuse, 9.
Malinda, 8.
Brett, 8.
Golden Russett, 8.
Haas, 7.
McMahon, 7.
Gideon, 7.
Antonovka, 7.
Wolf River, 6.
Grundy, 7.
Duchess, 6.
Utter, 5.
Kaump, 5.
Walbridge, 4.
University, 4.
Judson, 4.
Yellow Transparent, 4.
Charlamoff, 4.
Pewaukee, 3.
Phoebe, 3.
Borovinca, 3.
St. Lawrence, 2.
Rollin's Pro., 2.
Tetofsky, 2.
Repka Malenka, 2.
Red Queen, 2.
White Pigeon, 2.
Borsdorf, 2.
Christmas, 2.
Baldwin, 1.
Tallman Sweet, 1.
Scott's Winter, 1.
Cross, 1.
Bode, 1.
Peach, 1.
Romanka, 1.
Striped Anis, 1.
Gilbert, 1.

Crabs.

Minnesota, 5.
Hyslop, 4.
Lyman's Pro., 4.
Transcendent, 3.
Martha, 3.
Shields, 2.
Pride of Minneapolis, 2.
Orange, 2.
Florence, 2.
Early Strawberry, 2.
Whitney, 2.
Gen. Grant, 2.
Faribault, 1.
Gideon's No. 6, 1.
Dartt, 1.

Pears.

Kieffer, 2.
Flemish Beauty, 1.
Quince, 1.

PRESIDENT'S ANNUAL ADDRESS, 1903.

CLARENCE WEDGE, ALBERT LEA.

Brethren of the Horticultural Society:—

We are met again after a separation, measured by another cycle of months and seasons, to complete the calendar of the horticultural year by exchanging the treasures of thought and experience that we have gathered since last we met, and to renew and strengthen those ties that to many of us have grown strong and dear through many years of fellowship. While the echoes of a national thanksgiving are still in the air, we horticulturists would prolong the season by rejoicing together that both our society and the beloved art which it cherishes are still marching in the vanguard of progress. As the result of the loyal work of our people all over the state our society, already the largest by far of any on the continent, has increased its membership to about the fifteen hundred mark. It is not only growing but growing rapidly. It is not only growing in stature, but we believe that it is also growing in influence and usefulness. Year by year it has got hold of more of the struggling fruit growers, the enthusiastic experimentalists, the landscape artists and, more important than all, the earnest home makers all over the state, bringing them together, encouraging their efforts and making them acquainted with each other. To the fruit grower it has suggested methods of overcoming the peculiar obstacles found in our climate, so that he is beginning to compete in our markets with the growers of the older states,—and even commercial orcharding has become possible. The experimental horticulturist, with all his theories and foibles, has been taken by the hand with special welcome as our particular protege. The landscape engineer and the improvement league have been asked to come and soften the harsh outlines of commercialism and bring our people into better touch with that art that most truly imitates the Creator. And more than all others we have drawn to our counsels the earnest souls that would plant the family tree, and shelter and enrich the fireside. We have accomplished a great deal in the face of much adversity and opposition, and we have an honest pride in the record we have made. Indeed, we feel that the state has set the special seal of its approval on our work by lately adding very materially to its appropriation for our benefit—and by thus adding to our resources and ability to do still greater good we have been in a very true sense promoted and asked by the highest council in our state to go on and undertake more and greater enterprises.

And what shall they be? We are large and strong and growing. Our resources are tenfold what they were when the men whose

names we venerate accomplished so much for us and for the state. And if they did so much under such discouraging circumstances, with no past experience to guide them and a future of uncertainty and doubt, with what hope and resolution ought we to meet these added responsibilities and opportunities that have been given into our hands. First of all let us continue our policy of expansion and make new efforts to enlarge our membership. While we would appear to be doing better work in this direction than our sister societies, we are still a long ways from reaching the masses of our people. Fifteen hundred families is but a small fraction of the two hundred and fifty thousand families living outside the three great cities, all of whom need some form of our gospel of horticulture to make their homes a hopeful nursery of good citizenship.

A hint dropped by Miss Evans, of Northfield, in an address to us a year ago seemed specially available to the use of our society, to at least one of its members. It was this: "Why is not the farmer as much entitled to a winter holiday in the city as is his city cousin to his regular summer outing in the country"? Now that is just what this fraction of the farmers of our state are taking here this week—and we know how much good it does us. We go back refreshed in mind and body after a most royal good time and veritable recreation. Why not advertise widely our annual meeting as "The Farmers' Holiday Week in the City," with reduced railway fare, low hotel rates and all the accessories of a grand holiday outing? Why should not the first week in December, with the fall work all cleaned up, the barn and sheds all snuggled up for winter, and the storm windows on the house, be made the general occasion for all our country folk to take the most useful and joyous outing that the horticultural society and the attractions of the Twin Cities can afford. Our secretary has made a beginning in advertising something of this kind this year. Another year with your enthusiastic aid and approval, we hope that this idea may begin to have a general trial.

As one most hopeful way of increasing our numbers, it seems to me that we should have a general agreement that as a kind of annual interest due on the capital of good ideas we have received through the society, that each of us pledge ourselves to secure at least one new member for the society annually. We can do this the more cheerfully when we think of the benefits we are at the same time conferring upon those whom we thus persuade to cast in their lot with us.

And then we must plan to add to our usefulness as well as to our numbers. We must do more and better work, we must meet our

obligations more perfectly, and of all these obligations there is no one that more surely devolves upon us than that of encouraging experimental horticulture. We have lately been trying to meet this obligation by the offer of larger premiums for seedlings of the more prominent fruits, and it may be good policy to increase even the present very attractive premiums and add perhaps an occasional medal for productions or exhibits of special merit. Still there is nothing that the experimenter so much enjoys as personal appreciation. This demand we have tried to meet by giving the judges of seedlings the duty of exhibiting and commenting upon the best exhibits and have made this an important feature of one of our sessions. But the larger share of the burden in this matter must of necessity fall upon the individual members and requires them not only to give their personal notice and encouragement to those whom they know to be engaged in this work but to seek out and bring to light that which is yet in hiding. A delightful duty this, the performance of which gives the most hopeful promise of advancement in our art. In this connection allow me to mention the very powerful instrument that may be used to advance our interests that is found in the local newspapers of our state. We have uniformly found these papers glad to notice anything new or valuable that may be brought to light in any branch of horticulture and, what is more, such notices are read with interest by all the neighborhood. Thus object lessons, right at home, are made to do a grand work among many whom we would scarcely reach in any other way.

In closing may I be permitted to offer some words of personal counsel to my horticultural brethren, both in and out of the society, with the hope that a very imperfect practice will not altogether destroy the force of the precept. And, first of all, I would urge that with true whole heartedness we honor our calling. There may be higher vocations; that will altogether depend upon how our own is filled: the honor is in the filling, not in the vocation. It is a very special privilege of ours to live close to the ways of the Master of Life. We can but notice the infinite regularity and orderliness of all his work. Great results are accomplished, as only in this way great things can be, by exact and perfect system, and as it is in the spiritual sphere so it will prove in material affairs, that the measure of our imitation will be the measure of our success. There has been altogether too much looseness and confusion in our methods, our fields have been weedy, our rows crooked, our orchards ill kept, our boundaries slovenly. We have perhaps undertaken more than we could well perform and thus injured our business as well as brought our vocation into disrepute. Let us each by our example help to

bring about a revolution in this matter, so that in the future horticulture will stand for clean fields and businesslike methods.

While we are improving in the more solid and necessary matters we may also begin to copy more of the beauty that is spread out so lavishly all about us. The bloom on the grape, the winsome blush on the peach and apple, the prairie flower and autumn's gorgeous landscape, in unmistaken language reveal the mind of the great Exemplar. Shall his works all speak beauty and ours tell of nothing but bare utility? We have in a great measure emerged from the pioneer period, doubt and discouragement are giving place to security and strength, and we may now attempt much that was lately beyond our reach. We may now add to our strength beauty, and with the ability comes the duty. We may no longer allow our parks to languish, our cemeteries to lie waste, our lawns to be unkept, our homes flowerless. As we go forth from this inspiring gathering to plan the work of a new year we will each in his own domain make fresh endeavor to lift the banner of horticulture to new influence, usefulness and honor.

Mr. Oliver Gibbs: Fellow members, the remarks made by our president in his address regarding the future of this society have again brought to my mind a thought that occurred to me yesterday, and I will now embody that thought in a motion. It seems to me the society has now reached a growth that may well cause us to feel some alarm lest at no distant day it may grow so large as to break of its own weight into fragments unless something can be done by the foresighted ones in this society to avoid the occurrence of anything that may look like disaster or a retrograde movement. It seems to me there is one thing we may do now that may be a practical undertaking and which may avoid that danger, and that is to consider well the matter of establishing a permanent home in a suitable building for this society, and for that purpose and with that end in view I would like to make this motion: That a committee consisting of three or five members, with C. M. Loring as its chairman, shall be appointed by the president to take that matter under consideration, and to report in the future, either to the executive board or to the society direct.

Mr. Elliot: I want to second that motion, and in doing so I want to say that I think we have been drifting around long enough. While we are accommodated very comfortably here at the present meeting, heretofore our accommodations were very inadequate, and I hope this motion will meet the approval of the members and that it will prevail.

Mr. Frank Yahnke: I have been out with the institute corps throughout the state, and I find the sentiment in favor of fruit growing much stronger than many of us have any idea of. There is an increase in the desire for fruit, and there is an increase in the amount of fruit grown, and the people are very anxious to know

more about it. They want to know how to grow fruit, and there is no better means in existence of teaching the people how to grow fruit than through the medium afforded by the experience of this society, and this society should not rest until every man, woman and child, and all the boys and girls are members of this society, whether they own a farm or a city lot. Another thing I to say, do not start out with something small. We are growing and growing rapidly, and a home that might accommodate us at the present time might not be one-half large enough in five or ten years from now. So I say when you come to consider this matter, plan for the future, and make your plans to correspond to the bright future we are all willing to predict for this society. (Applause.)

Rev. C. S. Harrison (Neb.): I belong to the Massachusetts society, and it has a home. They have a pride in that home, and I think the action begun here today is one of the grandest moves that could be made.

Mr. A. J. Philips (Wis.): There is one point mentioned in the president's address to which I have devoted a good deal of thought and attention during the past ten years and even before that, and I trust the president of our state society will take up the matter this winter—and that is, to devise some means of getting at the rank and file of the people. I had that matter forcibly impressed upon my mind this summer. I have got a trial orchard in Marathon county where I planted ten acres of apple trees. I attended a dairy convention in that county, and I found farmers there who had never heard of that orchard. People come here and have a good time, they go home with the desire stimulated to grow good fruit—but we do not reach the mass of people. You people do more at your institutes to reach the people than we do. We must do more with the local papers to reach the people, and I think the president has struck the keynote of the situation in what he said about reaching the people.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

Your committee begs leave to congratulate the society upon the elevated and inspiring character of the thoughts embodied in our president's annual address. A following out of the sentiments expressed therein will make us better and happier men and women as well as better horticulturists.

We would especially commend these suggestions:

1. That we more widely distribute the good things of the State Horticultural Society by each pledging himself to secure one new member annually.

2. That we give more attention to the care of our roadsides, our lawns, our weeds and the straightness of our rows.

3. And, lastly, that the first week of December, 1904, shall inaugurate the custom of looking forward to the week of the annual meeting of the State Horticultural Society as "The Farmers' Holiday

Week in the City." How much handsomer the fruit display, how much more there is for us in the papers and discussions; how much better the bouquet, if our best girl has enjoyed it all with us.

All of which is respectfully submitted.

Wm. Robertson, C. E. Older, J. L. Tiegland, Committee.

REPORT OF EXECUTIVE BOARD, 1903.

WYMAN ELLIOT, CHAIRMAN.

The duties of the board have not been very arduous, having met only four times during the past year. Under the efficient management of your secretary, and the method of conducting the principal business of importance through correspondence, there was but small need for meetings of the full board.

The accounts of the secretary and treasurer were audited by your committee, and also on motion of Secretary Latham it was voted to request the Public Examiner to examine the books of the secretary's office. Complying with this motion and to further safeguard the financial record of the society, the State Public Examiner has been over the books and reported them correct.

On account of Wm. Somerville selling his farm, the new occupant, not desiring to continue the experiment work, the station at Viola was discontinued.

A. B. Lyman was appointed superintendent of trial station late in charge of his father, H. M. Lyman, deceased.

Your committee are considering the question of establishing a new trial station for growing and propagating of seedling apples, plums and other fruits. The records of such a station should be kept in a manner as to be easily intelligible to whoever may be superintendent or manager. We have thought of recommending that the society make application to our state legislature for an appropriation for the purpose of making proper time tests with all desirable seedlings grown, contributed or placed there for trial only. We are convinced that much labor, expense and time would be saved to the citizens of the state if seedling experiments could be conducted by persons possessing the very best ability, where conveniences, appliances, soils and environment are suitably supplied for producing the greatest results. The success of such experiment work would depend upon soil conditions and environment, and to make it permanent the station should be under the fostering care of the state rather than be conducted by private individuals, who often change or tire of such work. Such a station should be of a sufficient size to give each individual tree ample space in which to grow, under the most advantageous conditions possible, instead of follow-

ing the old practice of growing seedlings in thick nursery rows, where it is "the survival of the strongest" and where if by chance they grow to bearing size they produce only inferior, medium sized fruits. The board would like an expression of approval or disapproval of the above suggestion.

The legislative committee, after convassing the necessities of our horticultural work and the limited amount available from the state appropriation for its needful extension, decided it was wise to ask the legislature to grant yearly an additional $500 and an increase in printing of 1,000 copies of our reports. Like all appropriations it had to be engineered with considerable care and caution, and no little time was spent in preparing the minds of the members of both houses of the legislature for the small pittance asked. Several trips were made to the capital by the writer and Sec'y Latham. When the bill for our appropriation came up for its final passage there was not a dissenting vote, showing conclusively that we were receiving substantial backing for the energetic efforts put forth by the members of our society.

SECRETARY'S ANNUAL REPORT, 1903.

A. W. LATHAM, SECRETARY.

This report comes down to the termination of the thirteenth year of my connection with this society as its working officer. These have been years of very pleasant service not unmixed with sadness, however, as I recall the faces and forms of many who were valued counsellors and friends now gone from us, three of whom, W. W. Pendergast, Jas. T. Grimes and E. H. S. Dartt, have been taken away during the past year.

During these years, with the exception of one year, there has been, year by year, a steady increase in the membership of the society, until now at the close of the year 1903 the membership roll aggregates 1,430, which is 182 more than the total roll of last year. The membership this year is divided as follows: annual members, 1,308; life members, 82; honorary life members, 40. The gradual increase of this roll in a way indicates the growth and influence of the society and the extent of its work. Each additional name on the roll establishes one more outpost from which an influence goes abroad looking to the enlargement of the work of our organization. In the secretary's office hangs a map upon which have been located the homes of the members of the society; a little round ring of red ink indicates each spot. The southern half of the state is covered with some evenness with these marks, but in the northern half they are few and far between. Probably the most thickly marked area lies within 100 miles of Minneapolis, west and south, but the state

as a whole, considering its horticultural development as generally known, is fairly well covered.

For the annual list there have been received from local societies members as follows: Southern Minnesota Society, 71; Meadow Vale Horticultural Club, 12; Constance Horticultural Club, 17; S. D. Horticultural Society, 46. The latter society has been upon our roll on the same basis as our local societies in the state now for three years, as a matter of courtesy to its members till their state should arrange to print its reports, which has now been done.

The Farmer's Institute has brought us during the past year 262 members. This number is a slight increase over the previous year. A great many of the new members that have come to us during the past year have joined as the result of the efforts of our old members, and in connection with this work something like 349 books have been distributed as premiums. These books are largely the works of Prof. Saml. B. Green on "Fruit Growing," "Vegetable Gardening" and "Forestry." The society for a number of years also has been in the practice of sending out plant premiums to such of the members as apply during the winter months, and the past year have sent out 465 premiums of this character. While the material which goes into these premiums is contributed almost entirely from the Experiment Station, yet the expense connected with them, postage, wrapping, etc., is still quite an important sum, as will appear in the financial report.

The society, through its legislative committee, found it necessary to go before the last legislature and ask for a larger printing appropriation as well as a larger cash appropriation for the society, and it is a source of gratification to the management to be able to report that our requests, which were indeed very modest, were granted in full without the opposition of a single vote on either measure, in either house of the legislature. This increase will give the society in the future 4,000 volumes of reports instead of 3,000, and $2.000 per annum instead of $1,500. This increase in the printing was urgently needed at the time the bill was passed, and the number of magazines printed from that time on was increased to 1,700 per month. The coming year, 1904, will find the society somewhat crippled in its efforts to increase the membership, from the fact that the supply of bound volumes of 1903, which were printed under the old law, is very limited, so that the membership of the next year is likely to be restricted somewhere near the present figure. The ensuing year there will be available the full amount provided for by the last legislative act.

I should note here that the public printers, Harrison & Smith Co., increased the issue of magazines 200 and reports 100 at their own expense to help us out this year.

Some changes have taken place in the office of the society during the year, the most important of which being the purchase of a sufficient number of Wernicke book cases, with closed glass fronts, to contain what books are now in the library, but on account of the limited dimensions of the office not less than sixty bundles of books, averaging ten each, have been stored elsewhere for safe keeping until such time as increased accommodations will permit their being placed upon the shelves again. Most of these books, however, are reports of a character for which there is very little present use.

The increase in the work of the society incident to increase of membership, in part also to other work referred to later, has made it necessary to employ a clerk, who is also a stenographer, for the prompt and efficient carrying forward of the work of the society. This has added somewhat to the expense of the management but all of these added expenses are in the direction of efficiency and still find us well within the limits of our income.

There have been added to the library of the society, aside from the society reports, forty-eight volumes, two by purchase and the balance by exchange from the other similar organizations.

The experiment station bulletins, nearly all of which from the beginning of this experimental work have been coming into the office, have the present year been classified and entered in a register suitably prepared under topics, so that whatever information is to be found in these bulletins upon any particular subject can in most cases be readily located. This has already proved to be a great convenience to those who are interested in looking up subjects pertaining to horticulture. Of course this and any other material in the library is open not only to the members of the society but to the general public as well, it being our purpose to do all the good we can regardless of fraternal relationship.

The two meetings of the society that have been held the past year have probably been the most largely attended in its history, and the amount of premiums paid for fruit exhibited may be taken as some indication of their success. There was paid for this purpose at the last winter meeting $174.95, and at the late summer meeting $136.25.

In connection with the program of this meeting a special effort has been made to secure from the vice-presidents and superintendents of trial stations such reports as were evidently intended to be presented by the constitution as it refers to these officers, and that

they might realize more the value placed on these reports, the executive board some years ago provided for the payment of the railroad expenses of these officers to and from the annual meeting if such reports were presented. In the judgment of the secretary these reports ought to be made of large practical value and in a way to indicate the general conditions of horticulture throughout the state, which is fairly well covered by these officers.

Connected with the work of the society is the exhibit of fruit at the state fair and also, during a limited period, the fruit exhibit that the state of Minnesota is to make at the coming World's Fair. It is largely due to the fact that the secretary's office contains the machinery needed to operate these various affairs successfully that their management has come to that officer. To the horticultural society is due almost entirely the honor which belongs to us for the very fine exhibit of fruit made at the state fair. This display has indeed outgrown the dimensions of the present space alloted to us, so that the premium list has had to be changed and will have to be changed again to cut down quantity in the display, although we believe this is resulting in improving the quality. An effort to get out a fewer number of varieties and a higher grade of fruit we hope will result in such an improvement as we all desire. We are handicapped in this display somewhat by the fact that the fair is held a little too early to secure well ripened and highly colored fruit, such as the clear sky and dry atmosphere of Minnesota can produce. If the date could be postponed a week or two Horticultural Hall would be a much prettier spot.

Among the exploits of this society of which we have special reason to be proud, there is none which appeals to us more than the success attending our delegate, Mr. Wyman Elliot, with the display of Minnesota apples, and especially of seedlings, made at the late meeting of the American Pomological Society in Boston. Mr. Elliot was indefatigable in getting together the fruit which the society desired to show at that place. With the aid of Prof. Green, Mr. T. E. Perkins, of Red Wing, and others who were equally zealous, he was able to send from the state fair immediately after its close a collection which won for us the Wilder Medal and the attention of all the fruit growers who were gathered together at that great meeting. At the close of the meeting that portion of the display which came from the orchard of T. E. Perkins was repacked and returned to Minneapolis by express and is now on exhibition in the hall below. I wish to commend to you the report of Mr. Elliot in connection with this meeting which was published in the November number of our magazine.

As I make reference to the World's Fair in another place on the program, I will not speak of it further here than to call your attention to the fact that a successful exhibit at that time from our state is not only one of our privileges but equally one of the duties of the members of this society, and each one of us should feel a personal interest in bringing it about. The World's Fair Commission in appointing the secretary as superintendent undoubtedly considered the fact that behind him lies this virile and enthusiastic organization.

I have the honor to submit herewith my annual financial statement:

FINANCIAL STATEMENT.

Receipts of secretary's office:

Balance on hand at beginning of year	$281.75
Advertisements	135.25
Life membership fees	155.00
Annual membership fees, 1902	3.00
Annual membership fees, 1903	1,147.00
Annual membership fees, 1904	198.00
Premium books sold	27.67
Western Passenger Association, money refunded	9.75
State Fair	10.00
St. Louis World's Fair Commission	40.00
Sundries	13.93
Harris Memorial Fund	110.00
	$2,131.35

Expenditures of Secretary's Office:

Postage	310.25
Express	32.07
Office supplies	21.95
Telephone	32.40
Gas	1.92
Printing	161.21
Assistance in office	199.09
Office furniture	89.02
Books for library	28.89
Premium books	124.94
Engravings for magazine	67.54
Magazine envelopes	49.00
Plant premiums	34.71
Rent of office	158.00
Reporting annual meeting	98.45
Expenses annual meeting, 1902	270.14
Expenses annual meeting, 1903	27.88
Expenses summer meeting, 1903	1.75
Expenses executive board	15.75
Expenses legislative committee	4.90
Expenses of delegates	25.95
Expenses funeral E. H. S. Dartt	4.49

Harris memorial tablet	110.00
Assistant librarian	10.00
Discounts on annual memberships	148.10
Deposits in Hennepin County Savings Bank	268.56
Insurance	8.00
Sundries	6.87
	$2,311.83

GENERAL STATEMENT.

For Year Ending Dec. 1, 1903.

Debit:

Total receipts of office	$2,131.35
Received from society treasurer June 22, 1903	1,783.46
Received from society treasurer Nov. 30, 1903	546.37
Balance on deposit in Hennepin County Savings Bank, Dec. 1, 1902	913.72
Deposited in Hennepin County Savings Bank, Dec. 6, 1902	268.56
Interest on deposits in savings bank during the year	40.72
Total	$5,684.18

Credit:

Total disbursements of office	$2,311.83
Paid to society treasurer June 22, 1903	1,603.07
Paid to society treasurer Nov. 20, 1903	546.28
On deposit in Hennepin County Savings Bank, Dec. 1, 1903	1,223.00
Total	$5,684.18

GIDEON MEMORIAL FUND.

Contributions received to Dec. 1, 1903	$344.93
Interest on deposits	10.03
Total	$354.96

Strawberry Notes.

Machine planting does not firm the plants sufficiently, must go over and put the heel on most of the plants unless rain follows planting.

DUNLAP, if restricted to 16 in. width of row and plants not nearer than 4 in., will lead my list of sixty tried varieties To let it run wild will be a disappointment.

With friend Brackett's short handled hoe I don't think any one need think of machine planting.

Of the new varieties of strawberries I have great expectation of Oom Paul, Commander, Velvet, Dornan, T. T. Lyon, Lester Lovett and Midnight.

In June, 1903, I rated the following varieties according to value: Dunlap, restricted, 1st; Warfield, restricted, 2nd; Klondike, 3d; Enormous, 4th; Brunette, 5th. Aroma I think should be 2d. The following come about together: Splendid, Wood, Lovett, Glen Mary, Gandy, Clyde, Enhance, Windsor, Margaret, Jessie for clay soil, Sample, Gladstone, Haverland, Crescent, Kansas, Wm. Belt, etc.

GEO. J. KELLOGG, Lake Mills, Wis.

TREASURER'S ANNUAL REPORT, 1903.

A. B. LYMAN, EXCELSIOR.

Receipts.

1902.			
Dec. 1.	Balance on hand		$715.18
1903.			
Mar. 10.	State Treasurer, semi-annual allowance..	$750.00	
June 23.	A. W. Latham, receipts of secretary's office, Dec. 1, 1902, to June 23, 1903....	1,603.07	
Aug. 29.	State Treasurer, semi-annual allowance..	1,000.00	
	Total		$4,068.25

Disbursements.

1902.			
Dec. 1.	Order No. 109, A. W. Latham, Exp. Secy's office from June 18, 1902, to Dec. 1, 1902.	$268.56	
Dec. 1.	Order No. 110, W. W. Pendergast, president's salary, 1902.	25.00	
Dec. 4.	Order No. 111, A. B. Lyman, Treasurer's Salary, 1902.	25.00	
1903.			
Mar. 18.	Order No. 112, A. W. Latham, Secretary's Salary, 1st qr., 1903	250.00	
June 3.	Order No. 113, A. W. Latham, Secretary's Salary, 2nd qr., 1903	250.00	
June 23.	Order No. 114, A. W. Latham, Exp. Secy's office from Dec. 1, 1902, to June 23, 1903	1,783.46	
Sept. 1.	Order No. 115, A. W. Latham, Secretary's Salary, 3rd qr., 1903.	250.00	
Nov. 30.	Order No. 116, Premiums winter meeting, 1902	174.95	
Nov. 30.	Order No. 117, Premiums summer meeting, 1903	136.25	
Nov. 30.	Order No. 118, A. W. Latham, Secretary's Salary, 4th qr., 1903	250.00	
Dec. 1.	Balance on hand	655.03	
	Total		$4,068.25

APPLES FOR COLD STORAGE.—The secret of success in holding apples in storage is to get them there at the earliest possible moment after being picked from the tree. So said J. W. Clark, the successful Hampshire county (Mass) orchardist, at a fruit growers' meeting last winter. He was very empathic in placing the emphasis on this point. As apples are picked from the tree they are placed upon canvas spread on the ground, and the sorters and packers immediately follow, so that the barreled fruit is in cold storage in a very few hours after removal from the tree.

INFLUENCE OF PAPER WRAPPERS on the keeping qualities of apples in any kind of storage is well known by all who have kept fruit both with and without wrappers. Experiments do not indicate that any special wrapper is superior to another, but the use of some soft paper for the inner wrapper is usually practiced. This is generally a tissue paper, but unprinted newspaper is very satisfactory. For the second wrapper, a paraffin paper is the most desirable. Sometimes a third wrapper of common newspaper is used, and for large specimens it is better to use a thin layer of excelsior between the second and third wrappers.

RESOLUTIONS AS TO BOARD OF REGENTS, STATE UNIVERSITY.

(Adopted unanimously at the meeting of Minn. State Hort. Society.)

Resolved: That we think the Board of Regents of the University of Minnesota is earnestly endeavoring to manage the State University for the best interests of higher education in Minnesota, but we feel that the great and important interests connected with horticulture and agriculture deserve greater representation on this board, which at present is made up of three lawyers, two bankers, one editor, one doctor, one merchant, and the dean of the College of Agriculture, in addition to ex-officio members—and six of these members are from the Twin Cities.

Resolved: That we desire the appointment to said board of some representative farmer and horticulturist who shall be in close touch with the agricultural and horticultural interests of Minnesota.

Resolved: That a committee of three be appointed by the president, of which he shall be chairman, to present in person a copy of these resolutions to his Excellency, Governor Van Sant.

(The committee appointed were Chas. M. Loring, Wyman Elliott and A. W. Latham.)

Mr. Philips: My attention was called to this matter this morning by seeing one of the daily papers in which was recommended the appointment of Col. Van Duzee, of the Ramsey County Republican Club. It seemed to me when I heard the resolution read that as you already have six men from the Twin Cities—and if this man is selected you will have seven—it seemed to me that you ought to catch the word "farmer" in that list. The doctors, lawyers and bankers on that board no doubt are all excellent men, but the prominence that Minnesota now holds as a dairy, agricultural and horticultural state among the states of the Northwest—or for that matter the entire country and especially in view of the fact that you have taken that prize at Boston for seedling apples— it does seem to me that your farming element, the element that is back of all the business of this great state, supports the newspapers and public industries and supports your society, it does seem to me you need a representation of the farmers. They need not belong to any political party as long as they are good men, and I hope you will have such a representation for the good of your state.

RESOLUTION PERTAINING TO PROTECTION OF SONG BIRDS.

(Adopted at late meeting Minn. State Hort. Society.)

Whereas; There is much danger that some of the most valued friends the horticulturist possesses, the birds, will be destroyed, and whereas their destruction is largely due to the ignorance and indifference of our adult population coupled with the thoughtlessness of young boys and so called sportsmen, and, whereas, one of the most effectual means of informing the citizens of our state upon this subject is the public school. Therefore, be it Resolved that this

matter be brought to the attention of the approaching State Educational Association. That a committee of five be appointed by the Minnesota State Horticultural Society to present this resolution to said association, and urge it to adopt some immediate plan to systematically educate the children of our public schools on this important matter.

Mrs. J. B. Hudson, Lake City; Prof. F. L. Washburn, St. Anthony Park; S. A. Stockwell, Minneapolis; Mrs. E. M. La Penoitiere, Minneapolis; Mrs. Ida Thompson, Duluth.

Committee.

ANNUAL MEETING, 1903, MINNESOTA FORESTRY ASSOCIATION.

GEO. W. STRAND, TAYLOR'S FALLS.

This meeting was held Thursday afternoon, Dec. 3d, in connection with that of the Horticultural Society. Pres. Loring in his opening address reviewed the meeting of the American Forestry Association which was held in Minneapolis last August. He also dealt with the value of road-side planting and recommended that the state legislature should pass an act to encourage planting trees on our highways. The trees should be not less than sixty feet apart and not less than fifteen feet from the roadway.

Mrs. Bramhall spoke very ably on the Indian question and the effect of the "Morris Bill." Bearing on this question Mr. Chapman introduced the following resolution which was adopted:

Resolved; That the Minnesota Forestry Association does hereby most respectfully request and urge each and all of our representatives in congress to prepare, present and use all honorable means to have passed at as early a date as possible, a bill paying the Indians for the pine to be left standing for reforestation purposes, and providing for payment for timber and lands reserved under the so-called "Morris Bill"; and to do any and all other acts and things necessary or advisable to render said law operative and effective.

Resolved: That the secretary of this association is hereby instructed to at once send a copy of these resolutions to each of our said representatives.

Hon. S. M. Owen, Prof. S. B. Green, Gen. C. C. Andrews, Rev. C. S. Harrison and O. C. Gregg spoke on the various phases of forestry, emphasizing the needs of various sections.

The following officers were elected for the ensuing year:

President—C. M. Loring, Minneapolis.

Secretary and Treasurer—Wm. T. Cox, St. Anthony Park.

First Vice-President—S. M. Owen, Minneapolis.

Second Vice-President—O. C. Gregg, Lynd.

WHAT KILLED MY CHERRY ORCHARD?

C. W. MERRITT, HOMER, MINN.

My cherry orchard is a thing of the past, and a mighty dead thing it is, too. Last spring about 400 trees stood like a lot of dead sentinels about my orchard; where time would permit they were chopped into firewood and burned, and their ashes are now scattered to the four winds of heaven. The orchard represented the following varieties: Ostheim, Homer, Montmorency, Dyehouse, Colorado, Ostheimer, Wragg, old English Morello, Abbesse, Vladimir and Bessarabian. They all did finely in years of right condition, only the last three named were just old enough to begin fruiting.

In the spring of 1901 the orchard retained quite a good percentage of live buds after the spring freeze, and the trees seemed in normal condition. Early in June the leaves began to turn yellow and spotted with brown, which we thought was shothole fungus. The disease spread rapidly. By July the leaves had all dropped off, leaving the cherries hanging on the trees, about two-thirds grown. Soon new leaves started, and a blight, looking like potato blight, would attack every new leaf and soon kill it. We knew our cherry orchard was doomed. It did its work beautifully, killing root and branch. There was no choice made either; all varieties suffered alike, all died; not even a shoot has ever come up. We have no shoots to sell, nor cherry cord wood either. It makes a beautiful fire, and our faith in cherry culture goes up in the smoke. Who can tell what's the matter? Answer who?

THE ENGLEMANN VIRGINIA CREEPER (Ampelopsis.)—The Engelmann Virginia Creeper is a form of the common Virginia Creeper, or Woodbine, which adheres easily to brick and stone surfaces, and is the best climber we have for covering such work. It does not grow quite as strong as some of the common kinds, but the leaves hold on later in autumn and turn a most beautiful deep crimson. This seems to be so much better than the common form that we are growing no other kind.

It is very easy to propagate the Englemann Ampelopsis from seed, but the question has been as to whether the seedlings would be true to name: that is, whether they would vary so much in the matter of having the peculiar clinging properties which makes this vine desirable as to make it of little value. Last year we raised about a thousand of these vines, and our experience this season goes to show that this plant comes practically true from seed, and this method of propagation may be depended upon to produce satisfactory results. Of course this plant may be grown very easily from cuttings or layers.—Prof. S. B. Green.

ANNUAL MEETING, 1903, WOMAN'S AUXILIARY.

The Woman's Auxiliary had charge of the Wednesday afternoon meeting, a session that has come to be an especially enjoyable feature of the winter gathering. Miss Emma V. White, the president, opened the meeting with a few pleasant words of greeting, ingeniously weaving into her remarks the topics that were to be presented. She said:

"The Woman's Auxiliary of the Minnesota State Horticultural Society, unlike the parent society, can boast neither great numbers nor power, yet, like that of the women in the homes, we hope our influence though not so patent is no less potent. At least we hope we are no discredit to the horticultural society.

"It has become a custom for us to conduct one session of the annual meeting, a concession I think that at first was somewhat grudgingly granted, but we believe that even the greatest of the horticultural cranks enjoy our program, and some were gallant enough to say last year that we had the best session of the week.

"As the ladies are supposed to be the ornamental part of creation, so it is fitting that in our auxiliary we emphasize the ornamental in horticulture, and that is what our organization stands for—to further to the extent of our limited ability the extension of town and village improvement work, the beautifying of our school and home grounds, whether country, village or city, and to foster the beautiful in nature, leaving to our brothers the more practical things in horticulture.

"So we do not come to you with lengthy papers about best methods of tree grafting, but to bring to mind something of their intimate and, I may say, their personal relation to us; not to talk learnedly about budding, but rather of the budding of the beautiful June roses, the modest wood flowers or the gorgeous paeonies; not about how we can get rid of the birds that sometimes have a free feast on our strawberries or raspberries, but how we may protect these, 'our summer boarders,' and perpetuate their beautiful notes; not how every inch of space may be utilized for orchard or garden, but how we may improve and beautify the home surroundings; not to find out how some farmer grudgingly cuts off a corner from the least inviting part of his farm for a school site, but to learn how to select the most desirable spot, and how to care for and improve the grounds; not to talk about how many onions or cabbages can be raised in the limited area of a town lot, but to show something of the health-giving pleasures of garden work—and we feel that these things are quite as important as the other work of the society. We may say of the practical, 'This ought ye to do,' but also of the æsthetic, 'these things ought ye not to leave undone.'

"So we thank you, gentlemen of the society, for giving the ladies a part of the program, and for your respectful and interested attention always so freely manifested."

The ladies were fortunate in being able to borrow the services of some of the horticultural brethren, who lent their aid to the program. Rev. C. S. Harrison, the well-known pæony expert of

York, Neb., talked about his specialty, giving in his paper and in answer to numerous questions much valuable information on the subject of paeonies. Mr. Frank Nutter, city landscape gardener, Minneapolis, gave an illustrated and highly practical paper on "Improving Country School Grounds," a subject that needs to be emphasized and agitated in every community. And Mr. Oliver Gibbs, of Prescott, Wis., presented a paper on "Our Summer Boarders, the Birds."

The æsthetic and poetical side of our common friends, the trees, was beautifully presented by Mrs. C. M. Loring in her paper on "Our Cousins, the Trees."

The subject that elicited the most discussion was that of the "Protection of Song Birds," by Mrs. J. B. Hudson, of Lake City. Her paper showed a minuteness and patience of observation that only a bird lover would give. The lively discussion that followed resulted in the adoption of a resolution to present the matter before the State Teachers' Association in the hopes of securing the co-operation of the teachers of the state in inspiring the young with a greater regard for bird life.

Mrs. F. M. Barnard described the work of the Minneapolis Commercial Club in encouraging the beautifying of home grounds. Mrs. Barnard has served for two years on the committee to award the prizes offered, hence could speak most intelligently of the practical results.

Miss Martha Scott Anderson presented a paper on "Pleasures of Gardening."

As these papers will appear in the Horticulturist, further comment is omitted.

At their business meeting the old officers were re-elected, viz., president, Miss Emma V. White, Minneapolis; vice-president, Mrs. Jennie Stager, Sauk Rapids; Secretary, Mrs. Anna B. Underwood, Lake City; treasurer, Mrs. L. R. Moyer, Montevideo; Executive Committee, Miss Lucia Danforth, Northfield, Mrs. D. F. Akin, Farmington, Mrs. Louisa Cooke, Hutchinson.

The Woman's Auxiliary emphasizes more particularly the ornamental side of horticulture, yet they consider the improvement of home, church, school or village grounds as eminently practical, and are doing what they can to increase public sentiment along these lines. That great interest is felt by the horticultural society as a whole in their programs is evidence that their work is appreciated. And indeed, they received many compliments not only from our own members but from the visiting delegates, some of the latter assuring them they should report to their own societies what the women of the Minnesota Horticultural Society were doing, in hopes of arousing interest in a like work in their own states.

ANNUAL MEETING OF THE IOWA STATE HORTICULTURAL SOCIETY.

F. H. NUTTER, MINNEAPOLIS, DELEGATE.

The meeting of the Iowa State Horticultural Society, held at the capitol, in Des Moines, on the 8th, 9th and 10th of this month (Dec., 1903) called together a goodly number of the members and others interested in horticultural matters, and the delegate from the Minnesota Society had the pleasant privilege of renewing some old acquaintances and making many new ones. He can only acknowledge with thanks the many courtesies shown him by all with whom he came in contact.

Besides the Horticultural Society, the State Agricultural Society and the Iowa Park and Forestry Association held their meetings at the same time, and caused an embarrassment of riches, for not only were the forenoons and afternoons fully occupied but the evenings also; and as many persons were members of all three organizations, they were at a loss in which direction to turn their attention. In recognition of this fact the officers of all the bodies were directed to co-operate in the arranging of programs for future sessions in an attempt to minimize this evil.

The fruit exhibit, arranged in the rotunda of the capitol, was an attractive one of nearly 600 plates, showing specimens of about 400 of the over 600 varieties of apples which have been fruited in the state. But few fruits except apples were on exhibition.

On the other side of the rotunda under the auspices of the sister society, a fine exhibit of corn showed one of the chief sources of the prosperity of the state; indeed some of the speakers, especially in referring to park and kindred improvements, rather hinted that the financial gains to be obtained from "corn and hogs" blinded many and prevented their seeing other and possibly better things.

A glance at the varieties shown on the exhibition tables and at many of the subjects on the program, as "Treatment of Cherries and Pears," readily convinced a visitor from the "North Star State" that he was in a climate more conducive to fruit growing than his own, but the words of the speakers showed that even there perseverance, intelligent observation of conditions and hard work were equally necessary to success in either state and that with each one there was no "royal road to success."

The sessions of the first day were devoted to landscape and forestry topics, and in the evening President T. H. Macbride, of the Park and Forestry Association, gave a very interesting lantern-slide talk on rural home life, showing not only American homes but those in foreign countries as well. On account of other and con-

flicting meetings the attendance was small, a regretable circumstance, as the lecture was full of popular instruction and inspiration, and the audience should have been numbered by hundreds rather than tens.

Wednesday was given mostly to gardening and orcharding topics, one of which was the desirability of adding to the number of new seedling apples. Some seemed to think that with the Wealthy and a few other standard varieties at hand nothing new was to be desired, but the general concensus of opinion seemed to be that while the list of second-rate kinds was amply filled, still there was "room at the top" and further advancement was still to be sought and worked for.

At the day sessions the ladies were conspicuous for their absence, but on Wednesday evening the tables were turned a little, and the program was filled by ladies connected with the State Agricultural College. A couple of interesting papers treated, one on a botanical subject, "Habits of Growth in Plants," and the other on an interesting experiment in "Wild Gardening." Then followed papers, full of practical interest, on "Roots and Tubers as Food," "The Dietetic Value of the Legumes," and "Domestic Economy," including value of fruit for food, etc.

As one of the after speakers wittily summed it up, we learned that "with fruit for breakfast, pork and beans for dinner and codfish balls for supper" we had all that was necessary for our physical, mental and moral happiness.

Thursday a. m. the secretary reported on the meeting of the American Pomological Society, which he attended as a delegate; a paper on "Bee Keeping and the Orchardist" created quite a lively discussion, and it was evident that many of the successful horticulturists had also a liking for honey and experience in the care of the bee.

Thursday evening the subject of the state exhibit at the St. Louis fair was the leading topic, being discussed by the chief of the horticultural department of the fair and by the representatives of the state, and a determination was expressed that the state of Iowa should not fall behind any of her sister states in displaying the resources of her gardens and orchards.

With this session closed a successful and enthusiastic gathering of our Iowa fellow-workers.

Secretary's Corner.

Delegates to South Dakota and Wisconsin Societies.—Mr. T. E. Cashman, of Owatonna, is to represent this society at the annual meeting of the Wisconsin horticulturists. Their meeting takes place in Madison, Wis., early in February. Mr. D. M. Mitchell, also of Owatonna, is to represent our society at the meeting of the South Dakota society on January 19, 20 and 21. This meeting is to be held at Madison, S. D.

Delegates to Iowa Societies.—To the Northeastern Iowa Society which met in Decorah, Dec. 16, 17 and 18, went Mr. L. P. H. Higby, of Albert Lea, as our representative. Mr. F. H. Nutter, of Minneapolis was our delegate to the Iowa State Horticultural Society, which was held Dec. 8, 9 and 10. Reports of both of these delegates came into the hands of the secretary promptly and have been set up by the printers for this number but are likely to be crowded out by the press of other matter.

Have You Renewed Your Membership for 1904?—Some who receive this number of the magazine may not have as yet renewed membership for the current year. If you are one of the number, will you please give this prompt attention or write the secretary and state at what time it will be convenient for you to do so. We desire to continue every member of the previous year upon the roll but not against his wishes. The only way the secretary may know this is for you to write him about it. Kindly give this immediate attention.

A Valuable Sand Cherry Hybrid.—Erik Anderson of Lake Park, Minn., speaks of the Pennock hybrid, a hybrid between Moore's Arctic and the Rocky Mountain sand cherry, as the most valuable of the prunus family on his place, and he has seventy-five varieties of plums, besides four varieties of cherries and four of sand cherry and its hybrids. Of all of his plums he mentions the best to be Surprise, New Ulm, Beauty, Brittlewood, Quaker and Cheney. With him the Wyant and Desota are very productive and reliable.

Apple Seedlings Growing and in Bearing in the Northwest.—One hundred eighteen varieties of apple seedlings were shown at the late winter meeting of the society, but we are fully impressed with the belief that there are still others in the state that we ought to know about. Will our readers in the interest of orchard development of the northwest kindly write the secretary as to any such trees in their neighborhood, giving the name of the owner and such brief description of tree as may be at their disposal. The receipt of such information will be promptly acknowledged.

A Red River Valley Horticultural Society.—Mr. T. A. Hoverstad, of Crookston, writes, under date of Nov. 21, of the organization of a horticultural society in his section of the state, to be called the Red River Valley Horticultural Society. Rev. O. A. Th. Solem is president, and Mr. Hoverstad is the secretary. There are quite a good many members of the state horticultural Society in the neighborhood of Crookston, where Mr. Hoverstad resides, Mr. Solem's location being at Halstad, a few miles south of Crookston. Fruit growing is prospering beyond all expectation in that section of the valley.

PRESENTATION OF RESOLUTIONS TO THE GOVERNOR.—On the Monday following the annual meeting, in pursuance of the instructions of the society, the committee appointed for that purpose, namely, Messrs. Chas. M. Loring, Wyman Elliot and Secretary Latham, waited by appointment on Governor S. R. Van Sant, and presented the resolutions pertaining to the appointment to be made to fill a vacancy on in the board of regents of the University. Your committee was cordially received, and the presentation of the resolutions, followed up with such comments as were pertinent to them, had a satisfactory hearing. The resolutions referred to are to be found on page 29 of this magazine.

A SUGGESTION ADOPTED AT THE ANNUAL MEETING.—The following quotation is from the report of the committee on the president's address, and this report being adopted by the society so became the official sense of the meeting.

"We would especially recommend these suggestions:

"1. That we more widely distribute the good things of the state horticultural society by each pledging himself to secure one new member annually."

The best time to carry out this pledge is in the month of January. The next best time is February. Don't forget it, as the life of the society depends upon your work.

THE DESTRUCTION OF A CHERRY ORCHARD.—In this number under the title of "What Killed My Cherry Orchard?" will be found a recital of the loss of a valuable cherry orchard belonging to C. W. Merritt, of Homer. Cherries have heretofore done remarkably well in that portion of the state, especially what is called the Homer cherry. The loss of this orchard should receive serious consideration on the part of our readers, and any thought bearing upon it should find its way either to the secretary or to Mr. Merritt. It would seem that it was not lack of hardiness but the attack of some fungi that caused its death. Is there a protection from such conditions as resulted in this disaster?

A BUILDING FOR THE HORTICULTURAL SOCIETY.—At the late meeting of the society a committee was appointed, of which Chas. M. Loring, of Minneapolis, is chairman, looking towards the construction of a building suitable to the needs of the horticultural society. While this subject has been in the thoughts of our members for some time, the time had not seemed to be ripe heretofore for any sustained effort in the direction of securing such a building as we need. It is earnestly hoped that this committee may see some way of bringing this about. Suggestions will be very gladly received by the committee, and correspondents are invited to address Mr. Loring or the secretary on the subject.

THE LECTURER ON HORTICULTURE WITH THE FARMER'S INSTITUTE.—Mr. Frank Yahnke, who is well known to at least such of our members who attend our annual meeting, was out with the Institute Corps during the month of December and will go out with one of the corps again on January fifth. Who is to represent the horticultural interests with the other institute corps is not at present known, but Superintendent Gregg is greatly interested in this subject and believes the time is come when orcharding should receive attention with the Farmer's Institute. This matter is certain to be attended to, and we expect to be able to announce the name of the representative of our art with that corps in our next issue.

PREMIUM BOOKS FOR GETTING NEW MEMBERS.—There are six works on horticulture, of practical value in the northwest, offered to our members this year for securing new members. Four of them are the work of Prof. S. B. Green, the fifth the new Horticultural Manual, recently issued by Prof. J. L. Budd, with the assistance of Prof. N. E. Hansen, and the other is the work of the late Prof. E. S. Goff. These books are described in the little society folder to which we call your attention. Each member ought to secure for himself one or more of these books this year and at the same time help the society.

MINNEAPOLIS JOURNAL AND HORTICULTURE.—The Minneapolis Journal has a plan on foot which if carried out as proposed will do very much towards reaching the people with some facts in regard to the planting and care of fruit trees in Minnesota that ought to be more generally known. This plan provides for the printing regularly, and probably weekly, of such practical articles on the subject of Minnesota fruit growing as can be obtained from reliable growers in the northwest. The success of this scheme depends in a measure upon the support as an advertising medium that this proposed department may may receive from nurserymen, fruit growers and others engaged in horticultural pursuits in the Northwest. The probabilities of good in this scheme depend upon the ability and disposition of those who have it in hand in carrying it out. We wish it success.

PROTECTION OF SONG BIRDS.—The attention of our readers is called to some resolutions in this number looking to greater protection of song birds. The committee that was appointed in connection with the adoption of these resolutions has arranged to appear before the State Educational Association, which meets in St. Paul, December 28 to 31, and Mrs. J. B. Hudson, of Lake City, the chairman of the committee, will present the subject to the association and for this purpose has secured a place upon the program. In the way of getting information as to what has been done, if anything, as to teaching the young children in the public schools to protect the song birds, a letter has been sent to each county superintendent in the state, and we hope to secure some valuable information from these officers. The report of this committee will probably be published in the February Horticulturist.

SEND IN A NEW MEMBER IN JANUARY.—Have you already sent in the name of some person as a new member of the society for the year 1904? If not, please take this matter up promptly, with the purpose of sending in the name of at least one member during the month of January. According to a tacit understanding with our members, when the report for 1903 comes to hand the magazines received in 1903 are to be distributed, and this distribution furnishes the best kind of an opportunity for securing a new member. The little pink folder of the society, printed in large quantities, contains the fruit list and the ornamental list and very full information about the society and will be found very effective in securing new members. Take an evening and talk horticulture to such of your neighbors as should be interested in this subject. You will benefit them and yourself and the society. It is by this personal work almost entirely the society is making its growth. We are proud of the fact that the Minnesota society is the largest in the United States and intend that it shall continue so. The new members you take will receive the report of 1903, magazines in 1904 and two plant premiums, and you will receive some one of the books offered as premiums for your efforts.

DEATH OF MRS CLARENCE WEDGE.—Those of our members who were present at the annual meeting recall the shock of sorrow that struck the assembly when our president was suddenly called away from the meeting on Wednesday noon by the receipt of a telegram from New York announcing the death of his wife. Mrs. Wedge had been in failing health for some time and about a month before the meeting had gone to New York City to visit for a period with some brothers in the hopes that an entire relief from home cares might be of some benefit to her. She apparently improved for a short time and then was taken with violent headaches, and at the time President Wedge came up to the meeting her situation was known to be critical, but no immediate change was expected. On the morning of Wednesday Mr. Wedge had received a reassuring letter from her friends there speaking of her improvement, so that the telegram announcing her death received a few hours later came as a great shock. In this irreparable loss Mr. Wedge is assured of the kindest sympathy of the entire membership, with many of whom he had a warm personal acquaintance. The remains of Mrs. Wedge were brought back to Albert Lea, where she was buried on Sunday, December 6.

PLANT PREMIUMS GIVEN TO MEMBERS.—There are twelve different plant premiums offered to our members this year. Every new member is entitled to select two out of these twelve premiums, and every old member is also entitled to the same selection in case the membership is renewed prior to April 1st. Attention is called especially to the Pyrus baccata seedlings, intended for budding or grafting. These crab seedlings are grown from the genuine Pyrus baccata seed that Prof. N. E. Hansen secured in his travels in Siberia and Russia. We wish that every member of our society might test by actual trial the value of these as hardy roots for Minnesota apple trees. Much has been said about the Pyrus baccata as furnishing hardy roots for orchard trees in the northwest in recent publications of this society, and considerable will be said on the subject the coming year. Don't miss this opportunity to make the experiment for yourself. Since writing the above the following note has come to Prof. Hansen:

"The Siberian crab seedlings I reserved for you are some I grew from seed imported from Irkutsk, Siberia. This is near Lake Baikal in the continental region far from the ocean. My hope is that the trees will be used partly as experimental stock for budding and grafting at the collar after being established one season in the nursery row; and part to be planted out for fruiting, so that in time there will be an abundance of these small hardy Siberian crab apples to furnish seed for stock. The old Cherry crab is a large fruited representative of this species.

"To tell the whole story in a nut shell: A considerable area of the prairie Northwest experiences severe freezing weather with no snow on the ground. In such regions apple trees suffer from root-killing, wholly or in part. It has been "the worm at the root of the tree" all these years. In the course of two trips to Russia, in 1894 and 1897, I learned that the Russians had successfully solved the same problem on the northern limits of the apple belt by using the Siberian crab as a stock, especially the pure Siberian crab, *Pyrus baccata*, although the hybrid Siberian crab, *Pyrus prunifolia*, is also used. Piece-root grafting in the winter is not practiced nor recommended. The grafting or budding is done in Russia at the surface of the ground on seedlings already established in the nursery row. In the above mentioned region of the Northwest it will pay to give this Russian method a fair trial. Piece-root grafting in the winter, however, is not a fair trial of the method."

ROUEN LILAC.

Illustration shows a very fine specimen of the Rouen Lilac growing at the Experiment Station. This Lilac is one of the finest in cultivation. It is not especially new but is sufficiently well known. The leaves are much narrower than our common lilac; the branches are more flexible. On the other hand, the leaves are wider, and the branches are not so flexible as that of the Persian lilac. This is said to be a cross between the two. It is perfectly hardy.

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Trial Stations.
1903.

CENTRAL TRIAL STATION, ANNUAL REPORT.

PROF. SAMUEL B. GREEN, ST. ANTHONY PARK, SUPT.

In January last Mr. R. S. Mackintosh, who had been employed in the horticultural department for over seven years, resigned to become professor of horticulture in the Alabama Polytechnic Institute. This made an opening, which was filled by the appointment of Mr. Le Roy Cady, a graduate of the School of Agriculture.

A new dormitory building, which with the equipment cost $40,000, has been completed, and a large and complete machine shed has also been built. The last legislature made a total appropriation of $300,000 to be spent for new buildings and equipment during the biennial period. Two hundred and fifty thousand dollars will be available for building a main building and stock building next year (1904).

The grading about the new Chemical Laboratory has been completed. One bulletin (No. 83) has been published by this division during the past year. Its title is "Apples and Apple Growing in Minnesota." This is made up of eighty pages, and in it sixty-seven varieties are described, and there are forty-nine full page plates of apples.

The season as a whole has been favorable to our work, but there has been an unusually large amount of trouble from plant diseases. The Virginia crab, which we have regarded as being especially hardy and free from disease, was the past year badly affected by scab, so that some of the trees were nearly defoliated by the middle of August. The Wealthy has blighted seriously, but with this exception there has been very little blight on the

station grounds. We had an apple crop of about 300 bushels. As varieties that are not generally known, but are of general interest, I would call attention to Yellow Sweet, which is a very desirable sweet apple that seems to be sufficiently hardy and productive here to make it of general interest. The Cross (No. 413), which in former years we have regarded as of little value owing to its having been liable to decay at the core, was this year perfect in fruit and a most excellent sort. The Northwestern Greening tree, which begun bearing three years ago, again produced a heavy crop the past season. Brett No. 2 has commenced bearing, and this season produced a good crop of fruit. The tree is perfectly healthy and vigorous. We had a large

RED CEDAR WITH NORWAY PINE.

Illustration shows red cedar "forest garden," with Norway pine between. The red cedar were grown from seed sown in the spring of 1898, but which did not start until the spring of 1899. They were transplanted in 1900 to where they now stand. They are very thirfty and well balanced trees and have grown very rapidly. The seed came from Waseca county.

crop of Whitney, which were worthless in the market, but we succeeded in selling them for cider-making, and got a fairly good price for them.

Plums were a poor crop. The Surprise was the best of all the varieties that fruited. The Manitoba No. 1 ripened its fruit about the 8th of August. It is a small plum but is very productive, and on account of its early ripening may be desirable for marketing. Its quality is inferior; the fruit, however, is of a deep red color and would seem to be especially adapted to the northern portion of this state and other places where the season is short.

The Compass cherry (a sand cherry and plum hybrid) produced a large crop of fruit, but much of it was destroyed by the monilia and rotted on the trees. Among the cherries that fruited with us this year were Early Richmond, Wragg and George Glass, but most of our varieties had their fruit buds killed so

that there were few flowers that opened. Choke cherry No. 4, which was sent out by Mr. Knudson, of Sleepy Eye, has produced large crops of fruit for a number of years. The fruit is of large size, but seems to be of very little value either for cooking purposes or for eating out of hand. However, it might be desirable for especially severe locations, as it is perfectly hardy.

In our seedling orchard 125 seedlings fruited. Of these fifty were of fair size and of some promise. Of these perhaps one-third will keep in a common cellar until the middle of January.

PINUS PONDEROSA.

Illustration shows the rate of growth of the Pinus ponderosa. It will be noted that the plants are very vigorous in appearance. These were raised from seed sown at the experiment station about nine years ago. The seed of this tree grows very readily and seldom is troublesome about damping off. This is an evergreen that Mr. A. Norby, of Madison, South Dakota, says that he has grown successfully when planted in prairie sod at his home. It is the only pine found in South Dakota and Nebraska.

There is a form of this that is found on the west slope of the Rocky Mountains and Coast Range, but it is not so hardy as the form shown here, which comes from Colorado and the eastern slopes.

The seed of this species is quite cheap. A short time ago a friend of mine in the employ of the United States Government wrote me from New Mexico that he had gathered about 1,500 pounds of it, which shows how abundant it must be in some places.

About 500 plum seedlings have been planted the past season in a new seedling plum orchard. These are from the best named varieties, and we shall look forward to fruiting them with much interest.

Blackberries were a good crop, our Ancient Briton having done especially well. Some of the hybrids between the blackberry and the dewberry that originated with the late Mr. Fluke, of Davenport, Iowa, have fruited the past season, but in no case

have they been especially productive. With one variety, however, the fruit is large and of good quality.

Of raspberries, the Loudon and King have been the most profitable of the older sorts, but the Columbian probably produced the largest yield. The fruit, however, is so dark in color that it does not sell readily. The Minnesota Iron Clad raspberry, which originated with F. J. Empenger, of Maple Plain, is a variety that seems to have much merit. It is productive, and the fruit is large, and of a bright red in color and firm, and it seems to be well worthy of trial. Haymaker and Cardinal are two new varieties that we have fruited for two years, but they are purplish in color and in no way as good as the Columbian, so that we shall discard them.

Our strawberries produced a fairly good crop, but the plants were a little too thick in the row for best results. Senator Dunlap was the most productive of all the varieties grown and is well worthy of trial by all strawberry growers. Jewett seedling is rather too light colored to be popular in the market, but it is exceedingly productive. Our earliest productive sort was Johnson's Early, which at the station has done exceedingly well, but reports from other places seem to indicate that it is very variable.

Our seedling high bush cranberries also fruited heavily.

The forest garden, which has been planted some fourteen years, is now full of interesting object lessons. It contains over forty species and varieties of trees, a part of which are grown under forest conditions.

The care of the lawns the past season has been light as regards watering but unusually heavy as regards grass cutting, owing to the abundant rains. Some little addition has been made to our lawn planting, and it is our intention to make this work prominent, as it seems to be of very general interest. The feature of having the trees and shrubs on the lawns labeled with their botanical and common names seems to meet with general approval by many persons who visit our grounds.

Among the new plants that I would especially call attention to is the new Cut-Leaf Elder, which is entirely different from the old form and seems to be hardy and much more graceful in habit. It is a form of the Sambucus nigra. The Euonymus received by this division in an importation from Russia some years ago fruits much heavier than our native sorts and should be generally recommended for planting. I am inclined to think, however, that it is nothing more than the common European form. Clematis paniculata is a vine that is standing well with

us and one of the most beautiful flowering sorts that we have. It produces its flowers in the latter part of summer, or early in autumn after almost everything else has disappeared, and it does not seem to be troubled with any specially injurious plant diseases or insects.

The Oriental poppy, gorgeous in its scarlet coloring, is an interesting and ornamental plant and well worthy of a place among the hardy perennials.

About fifty varieties of potatoes have been grown. These were exceedingly healthy until the latter part of the summer, when they were affected by the blight which also affected the tubers and caused them to decay. Some sorts have rotted so badly that they were not worth digging. The kinds that have resisted the rot most satisfactorily have been the vigorous late

TOMATO PLANTS COMPARED.

RIPE VS. UNRIPE TOMATO SEED.—In the illustration the box of plants to the left in which the plants are short, was grown from unripe tomato seed which was gathered before the tomatoes had begun to color, in fact, while they were quite green. Such seed will generally grow and often start more quickly than that which is thoroughly ripe. The effect is to dwarf the plant and cause the fruit to mature rather earlier than from ripe seed. On the other hand it has a tendency to cause the fruit to be small and soft Generally only a small percentage of the unripe seed will sprout. The box to the right is from ripe seed. The illustration shows very plainly the difference in vigor of the plants when a few weeks old.

maturing kinds, such as Rural New Yorker, Sir Walter Raleigh and Carman No. 1.

A piece of land about one-eighth of an acre in extent, that this year yielded its seventeenth year of consecutive crops of onions, is of interest from the fact that it shows conclusively that this crop may be raised for many successive years upon the same land without serious injury, provided, of course, that there is no trouble from the blight stalk and provided it is suitably manured. Its seventeenth crop was nearly as large as any of its predecessors, and yielded at the rate of about 700 bushels per acre.

The plat of twenty-seven different kinds of hedges, which was started some four years ago, is now large enough to furnish

some valuable object lessons and seems to be appreciated by many visitors to our grounds.

The raising of seedling plants has been continued the past year in much the same way as in former years. We have raised about 14,000 apple seedlings from mixed apple seeds; about 450 Russian cherry seedlings; 4,000 buffalo berry; 3,000 hackberry; 1,500 Russian olive and 4,000 buckthorn. The crop of Pyrus baccata seed in 1902 was a failure on our grounds, but this year we have secured several pounds of seed and will continue the raising of these interesting seedlings the coming year. We have also saved about one-half bushel of apple seed from Whitney and other hardy sorts.

EXCELSIOR TRIAL STATION, ANNUAL REPORT.

A. B. LYMAN, SUPT.

The past winter was an extremely mild one, and all fruit trees that are at all adapted to our climate came through uninjured. There was no discolored wood, even on the half hardy varieties. This was due to the mild winter in connection with the fact that trees went into winter quarters in the best of condition and with wood well ripened. The ground being protected by snow it did not freeze deeply, and there was no injury to roots of fruit trees. Potatoes that were not dug in the fall were plowed out last spring in perfect condition; strawberries that had no covering whatever produced large crops of fruit, even larger than those that were covered and the covering taken off late, which threw the ripening into a drouth period. It does not follow from this that strawberries need no covering. They should be covered each season, as we have no way of knowing during which seasons they will have ample snow protection.

Spring and summer weather was not the best for a big apple crop the past season. Too much wet and cloudy weather was unfavorable. The yield of large apples, such as Wealthy, Duchess, Hibernal, Patten's Greening, etc., was fair, and many thousand dollars worth grown in this vicinity were shipped to the Twin Cities and west to North and South Dakota grocerymen.

The Patten's Greening is a great grower of fruit. Although a tree of recent introduction there were many barrels grown about here. The fruit is of large, even size and sells well on the market. We believe this society made no mistake in putting this variety on the fruit list as a leading sort.

The Anisim, like the Longfield, yielded large crops of fruit. The Anisim is the better selling fruit, because of its fine color.

Many orchards are planted altogether too close. We believe trees should be over 16x16 feet apart. Fruit trees must be sprayed to grow the best fruit, and in orchards where the limbs interlock it is very difficult to get around and do this work properly; also the same difficulty is experienced in gathering fruit.

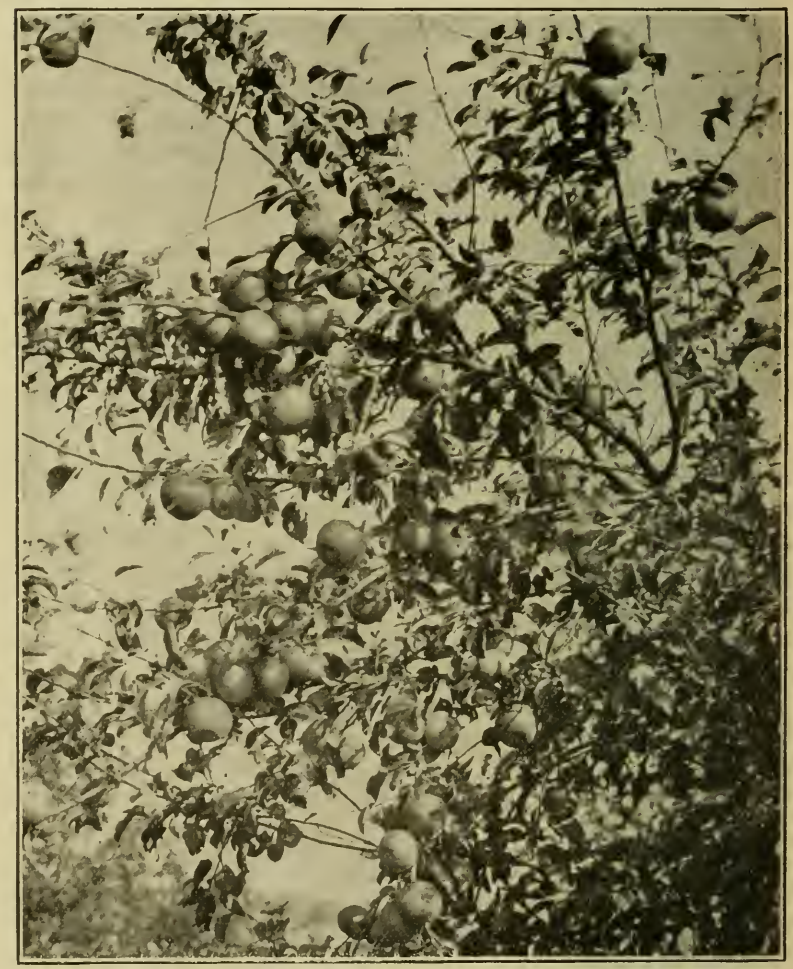
Orchards that were planted sixteen feet in rows running north and south, and the rows about thirty feet apart, are showing up well. The trees in the rows north and south protect each other somewhat, and the wide rows make it possible to grow corn, potatoes or other cultivated crops to an advantage. Orchards planted in this way can be made to yield hay to a profit. Some do not recommend taking hay from an orchard, but we think when hay is worth from $10 to $14 per ton it had better be cut and returned to the soil later by hauling short manure and spreading it on the surface.

The crab apple crop was light the past season. In spring prospects of a bountiful harvest were good, but the unfavorable weather seemed to be more detrimental to the crab than to the large apples. Our crabs set full of fruit in the spring, but later they were all more or less affected by a rust-like disease that caused the fruit to drop. This was not peculiar to any one variety but hit all alike. We have the Minnesota, Early Strawberry, Whitney, Transcendent, Martha, Florence, Gideon's No. 4, and Lyman's Prolific and they were all affected alike.

Other years the crabs have been far more profitable with us than the large apples. We still believe in crab apples and that the party that plants crabs of a good bearing sort is sure of good returns for his labor. We do not plant the Martha; they are too unproductive. They make a pretty ornamental tree while the bloom lasts, and that is about all. Martha trees fifteen and twenty feet high surrounded by other apple trees, and growing within a few rods of our largest apiary are as unproductive as those remote from bees. Many that have planted this variety will do well to use them as stock and top-work them with other varieties. We grafted a number of Martha last spring and had good success. As the tendency of the Martha is skyward, we grafted the outside spreading limbs, about the size of a lead pencil, making the splice graft. Cions that were kept dormant and put in late did the best; many that were grafted early were not

successful. Another year early grafting might be the best. We cannot be governed by any one experience.

Crab trees top-worked to Peerless are profitable. The Peerless is a good fall variety, and the fruit sells well. It bears much better when grown in this way.



SPRAY OF FRUIT ON A WEALTHY SEEDLING.

In seedling orchard of A. B. Lyman. Picture taken in September, 1903.

What shall farmers plant for a winter variety? Many think of the Wealthy, Peerless, Hibernal, Patten's Greening as winter apples, but they really are not. With us they can be kept in any quantities but for a short time, and by November first they are badly perished. The Malinda we know will keep, yet we

want a fruit of better quality and a tree hardier than the Malinda to plant largely as a winter apple. We think quite favorably of the Northwestern Greening. The tree is a good grower, as hardy as the Wealthy, and the fruit keeps a long time after the other varieties I have mentioned have perished.

Must we not look to the seedling varieties for some good late keepers that are hardy and fruit of good size and quality? The premiums offered by the state fair and our society surely will bring out such varieties. Our Wealthy seedlings originated from Wealthy seed planted in 1876 bore fairly well this season. A number of these are good winter keepers and have taken many premiums as such.

We have added to the trial orchard this year some four varieties of plums, sent by O. M. Lord. Apple trees have gone into winter quarters in the best of condition. The soil is moist, and the wood is well ripened.

Apple trees that are cultivated should be mulched, as they have no snow protection. A slight mulch seems to be all that is necessary. First bank the trees with earth as a safeguard against mice. By wrapping with burlap many trees are saved from rabbits and sun-scald. To be a successful orchardist we must tend to these little things.

Apple seed saved a year ago and allowed to freeze during the winter grew finely. These seedlings were dug this fall by plowing from them with a common plow. This made pulling an easy matter. Where the seed was not planted too thick they are nearly all number one, and each will make a number of grafts. We much prefer apple roots grown from our home seed, as they do not root-kill so readily as do roots from southern grown seed.

MINNESOTA CITY TRIAL STATION, ANNUAL REPORT.

O. M. LORD, SUPT.

The following apple scions were received from J. R. Cummins, of Eden Prairie, and were set on Pyrus baccata stock: Kaump, Zettel, Hotchkiss, Winstead Pippin, York Imperial, Oligher, Winter Seedling, Rome Beauty, Scott's Winter, Allen's Choice, Superb, Zettel No. 4. The Pyrus baccata stock appears to be well adapted to them. Some small trees one year old were also sent by Mr. Cummins: York Imperial, Superb, seedling crab, Newtown Pippin, Lyman's Prolific and Hotchkiss.

Mr. A. B. Lyman sent to me three Prolific and two Brackett's Sweet.

Mr. Kerr, of Maryland, sent to me some plum trees: Waugh, Gonzalez, Duke, Worth, Value and Advance; also some chestnut trees and some Japanese walnut. These trees were received in the fall, with some trees from Mr. Emil Sahler, of Waseca. For fear of rabbits and cold weather, they were buried out of doors and all covered up. If the ground had frozen as usual they would not have been hurt, but the plum trees in the spring were found to be very much injured. They only grew by cutting back severely.

Prof. N. E. Hansen sent twenty-four kinds of sand cherry, which have not done well. I can give no reason why.

No plums nor apples were produced at this station last year. The trees have made a fine vigorous growth.

Strawberries were very good; the Bederwood, Warfield and Splendid did the best, the Mary did very well. The following new ones have been set: Joe. Rollins, Lloyd, New York and Senator Dunlap. These are apparently doing well.

Blackberries were little more than one-half a crop. Red raspberries did very well. The Rathburn blackberries give promise of being an excellent variety; the Badger State, however, is the principal one grown.

MONTEVIDEO TRIAL STATION, ANNUAL REPORT.

LYCURGUS R. MOYER, SUPT.

The Russian apples obtained from the agricultural college at Ames., Ia., in 1891 and 1892 have nearly all come into bearing. Probably the best of these for this locality is the Hibernal. It seems to be unaffected by cold or blight. A fine show of Hibernals was made at the county fair this year raised in black, heavy, prairie soil. The trees at the station have been regular and heavy bearers for several years. The Hibernal is an excellent cooking apple, and they are fine canned for winter use. Apple sauce made from Hibernal apples has a snap and character of its own that is very taking.

The Blushed Calville as sent out from Ames proved to be an early and abundant bearer of fine looking white apples, ripening in July about two weeks before the Oldenburg. The trees blight a little, the infection seeming to come from a Transcendent crab near by. The quality of the Blushed Calville is excellent and the apples are fair sized. We have never noticed the slightest ten-

dency on the part of this apple to blush, and think that the word "blush" is a misnomer.

The Anis (No. 984) seems to be very hardy. It ripens in September, and the fruit is of fine quality. The tree seems to be a rather shy bearer so far, but it is very healthy and free from blight.

Anisette as received from Ames is a fine apple, but it is identical with Oldenburg.

Ostrakoff (No. 4 M) is doing well here; it appears to be hardy in tree and very productive. It should be classed as a late fall apple.

Gideon, Wealthy, Minnesota and Whitney all produced fine crops.

Virginia crab was much affected by scab.

Pride of Minneapolis produced a heavy crop, but it was affected by scab.

Smd No. 1 is a large apple, but the tree is only moderately productive. The fruit matures soon after Oldenburg has gone.

There was much blight this season on all apple trees, more especially on the crabs. Sweet Russet was much affected. The Russian pears seemed to suffer from the blight even more than the crab apples.

A fungous disease attacked the currants and gooseberries about midsummer, causing them to drop their leaves. They can hardly be expected to produce much of a crop next year. The flowering currants and even the wild currants were affected in the same way. The flowering currant will probably have to be given up as a border shrub.

The plum crop was excellent. The variety that gave the greatest satisfaction was the Stoddard.

Catalpa speciosa has done unexpectedly well here, flowering profusely and even ripening seed.

Tamarix amurensis failed here when planted on black prairie soil near a thick border of lilacs. The trial was hardly a fair one, for scarcely anything will grow near a thrifty lilac bush. We have replanted the tamarix on high, well drained land and hope for better results. It is a beautiful shrub.

In the spring of 1898 there was planted at this station two acres of seedling pines, the material for which was furnished by the Department of Agriculture. There were about 8,000 seedlings set, the greater part being Scotch pine about six inches in height, and a smaller number being Austrian pine and Pinus ponderosa. The ponderosa seedlings were from eighteen to

twenty inches in height when set. The instructions sent out by the Department were to set the pines alternately with deciduous trees in rows two feet apart, the trees to be two feet apart in the rows. We thought this planting would be too thick, so we set the rows four feet apart, placing the trees two feet apart in the row. Some of the planting was done by alternating the pines with our common forest trees, such as box elder, elm and green ash. Another part of the plantation was set alternately with wolfberry (Symphoricarpos occidentalis), but rather more than half of the ground was set to the pines alone. The planting was done in the common way. The seedlings as taken from the box had their roots dipped in a puddle of clay and were immediately heeled in in mellow ground. The planting proceeded at once, the trees being taken in small quantities to their permanent location, taking care to keep their roots carefully covered. We took special pains to set the seedlings firmly in the ground.

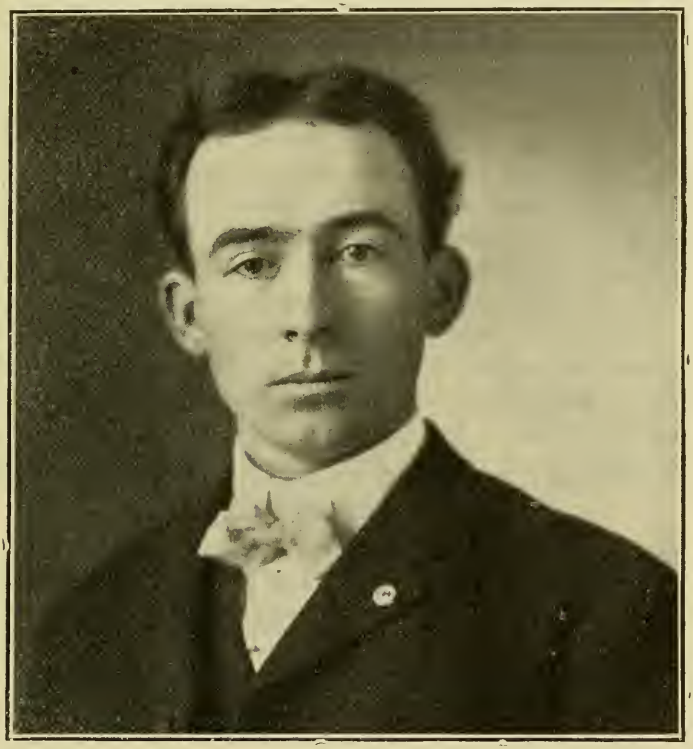
The trees have received only ordinary cultivation, such as might be expected on a rented farm. The result has been a fine stand of trees. The Scotch pine are now from four to six feet in height; the Austrian pine about half as high; the Pinus ponderosa, which were much the largest on the start, being still a little larger than the Austrians. The best results were obtained in the pure plantation of pines where there was neither nurse tree nor shrub. The pines set with nurse trees have not done so well, but they have done far better than those set with the wolfberry. The trees are far too thick for a forest. The percentage of loss during the first year on the Pinus ponderosa was far greater than on the other pines, but those surviving look very hardy and thrifty now.

Among the material set for experimental purposes this season are the following: Spiraea prunifolia, lilac Senator Vollard, Syringa Persica laciniata, Hippophae rhamnoids, Salix alba, Philadelphus microphyllus, Clematis paniculata and Lonicera sempervirens.

OWATONNA TRIAL STATION, ANNUAL REPORT.

THOS. E. CASHMAN, SUPT.

As superintendent of the Owatonna trial station, I beg leave to make the following report, which must necessarily be short, as I am not prepared to give the true merits of the trees propagated and cultivated at the Owatonna station, for several reasons: first, the trees have been planted so closely together that the fruit in most cases is quite small; second, a number of the best keeping varieties failed to bear fruit this year.



THOS. E. CASHMAN, OWATONNA.

We have marked or cut down the trees showing little or no value from the fruit they bore, which will give more room for the worthy ones to show what they are good for next year.

Mr. Dartt had disposed of nearly all the blighters, as he had no time for a variety which showed any signs of blight; so most all trees show great promise of hardiness, but it will take time to tell the true value of the fruit, although some varieties have shown themselves to be very good keepers and the fruit to be fair of quality.

We are cultivating a number of the known hardy kinds, such as Wealthy, Duchess, Peter, Patten's Greening, Hibernal and Iowa Beauty—and, by the way, the Iowa Beauty has shown up splendidly at the station this year. It ripens about the time the Duchess has passed out of existence and will keep about three weeks, thereby filling in between Duchess and Wealthy. The tree seems to be an ironclad, and the fruit is very fine, especially as a dessert apple. I presume Father Dartt's object in cultivating those varieties was on account of the assistance they would give in determining the real value of the new productions planted where conditions existed alike; and I must say they do render valuable assistance as far as determining hardiness is concerned.

As instructed by Prof. Green, an effort was made to dispose of the evergreens of marketable size, and the proceeds therefrom were turned over to the state treasurer. There are a few left, which can likely be sold next spring. Last spring we grafted and planted a number of varieties that had shown promise heretofore and will do the same next spring.

Next season we will also do some judicious spraying to eradicate the insect pests, and along with the extra room, sunlight and circulation of air which the thinning out will accomplish I am in hopes that the fruit on trees that bear will be at its best and that I shall be able to make a full and intelligent report at the winter meeting next year.

PLEASANT MOUNDS TRIAL STATION, ANNUAL REPORT.

J. S. PARKS, SUPT.

The season just closed has been a peculiar one from a horticultural standpoint. Our fruit trees went through the winter of 1902 and 1903 in fine condition. Spring opened favorably until about blooming time for apples and plums, when a cold period set in accompanied by high wind and severe frosts that killed most of the plums and considerable of the earlier blossoming apples. Through the summer, although we had an abundance of rain, the trees made a light growth of very unsatisfactory wood; fruit buds are few and lack that full, plump appearance common at this season. Owing to a scab or blight that affected the leaves as well as the fruit of several varieties of our apple trees, some trees, such as Haas, Scott's Winter and several others, made very little or no growth and at present appear to be permanently injured. Plum trees fared better, but the green aphis got in its work to the permanent injury of many shoots.

Scions from Nova Scotia of Chebucto, Reynard, Gravenstein and several other varieties, top-worked on Virginia crab and Hibernal in the spring of 1902, came through the winter in fine shape and made a fair growth this season. We are watching this Chebucto variety with much interest. It is the largest apple in the world, I believe, having been raised to weigh thirty ounces, and has other good qualities. We want all of the best in apples, and this seemed to be the "missing link."

We received scions of the Brittlewood and Free Silver plums from Prof. Green, that we top-worked on our native stock with very good success. Our planting of apple seed taken from apples in our cellar May 15 and 30 and June 15 and planted at once, germinated fairly well, but as the young plants were not shaded the hot sun just at that time killed a large proportion of them. That would not have happened had they come out of the ground in early spring. One thing was demonstrated: that apple seed will germinate without freezing if planted without drying. The scab or blight that visited our fruit this season caused a loss of more than half our apple crop. Haas, Walbrige, Snow, Scott's Winter and many other varieties, including many seedlings, were entirely ruined.

The codling moth that was so plentiful last year did not make its appearance this year in our fruit, giving the scab control of the situation. Perhaps the worm was afraid of catching the scab.

Of small fruit but little is raised here, only for family use, and I have nothing to report.

SAUK RAPIDS TRIAL STATION, ANNUAL REPORT.

MRS. JENNIE STAGER, SUPT.

The past season was a disastrous one as far as vegetables were concerned. Potatoes were few in a hill, and part of those rotted in the ground, while many of the remainder rotted after being put in the cellar. Beets, carrots and other root crops were poor in clay soil, owing, I suppose, to the exceptional wetness of the soil.

But strawberries, oh, my! loaded with fruit and of a size that beat the record. Not one kind, but all kinds, were larger and more prolific than ever before in my knowledge. Those from Clyde, Brandywine and Champion were as large and some larger than a Transcendent apple. Never say again that in gaining size fruit loses flavor. That may well happen in California but not, I can assure you, in Minnesota. Never tasted strawberries so delicious.

Then the raspberries, Turners, Cuthbert, Miller's Red and Columbia, were so large and so loaded with fruit that people passing

on the road would lean on the fence and comment audibly. Golden Queen was also laden with large, fine berries of good flavor. Gregg, the black raspberry that does the best with us, was in fine feather.

As for blackberries I had been for several years trying to entirely exterminate them from the garden, as our seasons here have generally been too dry for them unless irrigated, but quite a number had grown up along the fence, and this summer I was surprised with a crop of large, luscious berries. Currants and gooseberries did very poorly, but the black Crandall currant made a wonderful showing.

Plums, especially Wolf, Rockford and Surprise, came out fine and were extra large, but ripened quickly and if not gathered and used immediately rotted. Indeed some rotted on the trees, and this did not apply to any one kind but to all.

Apples, where the trees were not blown down by the cyclonic wind which passed through here in the summer, bore so heavily that unless lightened of half their fruit they lost many limbs. Sweet Russet, Martha, Wealthy, Patten's Greening, Duchess and Hibernal gave plenty of fruit.

Grapes somehow never ripened. Elderberries, however, were a mass of bloom in spring and later were loaded with fruit, fine for pies or wine.

Of cherries, Compass, Wragg and some of the Russians did remarkably well.

Roses, pæonies, gladioli, lilies and, in fact, all flowering plants and shrubs gave an abundance of bloom, while evergreens especially seemed to like the condition of the soil and thrived accordingly.

The fruit growers of this vicinity had quite a good showing of home grown fruit at the St. Cloud street fair. Rev. John B. Katzner, of the university at Collegeville, made a grand showing of apples, plums and grapes, the latter, however, not entirely ripe. Mr. E. Cross had some good seedling apples from those trees sent out by Peter Gideon some years ago, and received several premiums. Mr. Mayman and Mr. Rook, besides several whose names I did not get, made a good show of fruit and had numbers of premiums. The State Reformatory also had a large booth for showing fruits, vegetables and the different kinds of manufacturing done by the boys of the establishment. In fact, the building set apart for the horticultural exhibit was so crowded that on my arriving late there was no vacant place, but the editor of the Journal-Press, Mr. Eastman, kindly donated the use of his large show window for the use of the Station, and I soon had it filled with fruits and flowers, and a notice in the background from whence they came.

WEST CONCORD TRIAL STATION, ANNUAL REPORT.

FRED COWLES, SUPT.

The past season has been an unusually wet one, and the results of our efforts have been varied; there have been failures as well as successes. It required a great deal of perseverance to keep weeds down, which we consider one of our enemies, but the continual use of hoe and cultivator did the work. But we find that these conditions which make weeds thrive also make useful plants and trees do well.

The past spring we set out for trial the following trees and plants: twenty seedling apple trees, Estaline apple, high bush cranberry, buffalo berry, elderberry, Russian olive, yellow willow, laurel-leaf willow, hydrangea paniculata, rugosa alba and California privet. Without any exceptions all are doing well.

We are testing the following varieties of apples:

Wealthy bore some, but not as heavily as we had hoped; though trees in the neighborhood bore too heavily for the good of the trees. It blights some.

Peerless bore a good crop but were afflicted with a scab. These trees were set in cultivated ground, while trees set in sod bore heavily and were free from scab. Did this difference in the soil have anything to do with the difference in the apples? Free from blight. Very hardy.

Patten's Greening bore a heavy crop. This we consider an extra good cooking apple, but the keeping quality is uncertain. While some turn black on the tree, others are sound and good in the cellar now, Dec. 1st. Tree seems hardy and quite free from blight.

Northwestern Greening. The trees on our grounds have been set four years and bore lightly, but those in the vicinity bore heavily, being set longer. One tree set eight years bore four bushel in 1901; in 1902, the ninth year, about two bushel and in 1903 it bore fourteen bushel. It seems to be quite an early and annual bearer. So far it proves to be a hardy tree and free from blight.

Longfield tree blights. It is an early, annual and heavy bearer, and keeps until this season, Dec. 1st. It is small but good for all purposes, especially baking.

Harry Kaump. A very pretty tree, hardy, free from blight, bears quite young; color yellowish green; a little larger than Longfield.

University tree hardy, free from blight, fruit about the size and season of Patten's Greening.

Strawberries bore a very good crop. I picked 10,000 quarts. I lost about 2,000 quarts by rain. I like the following varieties, in the order as I name them: Warfield, Senator Dunlap, Lovett's, Splendid, Bederwood, Enhance and Crescent. I have been testing Rough Rider, Nic Ohmer, Plow City and Aroma, but these I shall discard as they are not productive enough on my grounds.

Raspberries. The crop was very poor. The canes made a poor growth in 1902, but this year they have made a splendid growth. I look for a good crop next year.

Grapes did not do well this year, as it was too wet and cold. Varieties fruited are Moore's Early, Concord, Worden and Campbell's Early. The latter fruited for the first time. I believe this to be a good market grape, though the skin is a little tough, making it a good shipper. Quality good.

WINDOM TRIAL STATION, ANNUAL REPORT.

DEWAIN COOK, SUPT.

The season just past may be noted as being the wettest since the settlement of the country, very little farm crops of any kind, except grass, being raised in this vicinity owing to the excessive and continuous rainfall.

Of the tree fruits the plum suffered the most. At the time they were in bloom we had most of the time sunshine during the daytime, but it rained hard about every night. We thought it was favorable weather for the fertilization of the blossoms, but suddenly the bloom began to wilt, much of it drying up and hanging on the trees most of the summer; some of it still clinging to the branches at the time this report is being written.

This blossom blight was not confined to any particular variety but took most everything. The varieties that were the least injured were Rockford, Hawkeye, Stoddard, Rollingstone, Wyant and some seedlings. The varieties most injured by this blossom and spur blight were Weaver, Surprise, Compass, Harrison's Peach and all sand cherries—the buffalo berries went the same way—so many of the fruit spurs being dead on my trees that I do not expect much of a crop of plums next season.

The strawberry gave us a big crop, everything except the Brandywine apparently doing its best.

We had a little experience with the strawberry rust. It was on a patch of one-quarter acre set the spring of 1902, and in a sheltered locality. The only covering the plants had was the snow which drifted over them. There was a lot of freezing and thawing in the spring after the snow had melted away, but the plants appeared to be in good condition, however, set fruit for a good crop and grew finely until we had got one or two good pickings of ripe fruit from them. Then they failed, those varieties carrying the most fruit failing the most completely. We

AFTER SLEET STORM ON PLACE OF MR. DEWAIN COOK, IN APRIL, 1903.
Honeysuckle in the foreground nearly in full leaf covered with ice.

got no good fruit from the Warfield or Bederwood, even the plants about all died. The Glen Mary, Dunlap and Crescent gave us two good pickings and then failed. It began to rain continuously and the foliage on the Glen Mary died, and the fruit partly covered with dead strawberry leaves lay almost literally in heaps rotting on the ground.

There was no rust or failure on the older beds or upon any of the new ones that had been properly covered with mulching the previous autumn.

The apple has been an interesting study the past season. The ground was so wet that many trees on the lots of our nearby village of Jeffers that were set the past spring, box elder and elms, died in midsummer from no apparent cause except excessive moisture in the soil.

This being the condition here, we expected that on our low lands many of our bearing apple trees would be in a dying condition. But no such thing occurred, and these low land trees matured a fine crop of apples. Although many of them were affected by the scab fungus, they have the usual number of fruit buds for next season's crop and are apparently going into winter quarters in good condition.

Whitney No.20, which we consider more of an apple than a crab, gave us a fine crop. This is one of our most successful varieties, nearly free from blight, and the fruit sells better each season.

BOX ELDER SEEDLINGS OF FOUR YEARS' GROWTH AT WINDOM TRIAL STATION.

The *Okabena* is another variety of apple that is proving of great value. We had a fine crop of them.

Patten's Greening also bore a heavy crop. It was a wonder to many visitors to see a number of young trees of this variety loaded down with apples and nearly every specimen being larger in diameter than was the body of the trees which bore them. This variety seems to be at home here, but is more subject to the brown rot than any of my other varieties.

The *Peerless* bore a light crop of large fruit of excellent quality.

The *Wealthy* bore its usual good crop, but only a small per cent of the fruit was strictly No. 1; 15 or 20 per cent was good for little else except cider. We consider this one of our most valuable varieties and shall continue to plant largely of it.

Duchess gave us a large crop of fruit that was free from fungus. I am inclined to think that this variety has more good points than have any of the others which we are growing.

The *Cross* and the *Antonovka* gave us a fine crop and no fungus. We consider them worthy of general trial.

The *Gipsy Girl,* which we heretofore have thought highly of, is about dead from blight; the *Little Hat* is going the same way.

Charlamoff proves a shy bearer.

Hibernal gave us its usual good crop and has proved of great value here.

Breskovka is one of the most reliable bearers that we are growing, but the fruit is only of medium size and somehow does not sell well in competition with the Duchess.

Northwestern Greening bore finely on top-worked trees and is promising as a late keeper.

The *Thompson,* also a winter variety, bore equally well and the fruit is of fine red color. The tree is not quite hardy.

Malinda, Judson, Grundy, Swaar, Plumb Cider, Brett No. 2 and *Sweet Russett* crab set for a good crop but produced no perfect fruit.

Scott's Winter gave us a few specimens. We have been growing this variety for twelve years and consider it of no value.

Yellow Transparent, White Astrachan and *Juicy White* produced fairly well and were our best early eating apples.

Tetofsky disappointed us. Its fruit is rather small and does not bear enough.

One noticeable thing about most of the Russians which I am growing is the remarkable freedom of the fruit from fungus. Of the large number of these varieties which I am growing the only kinds that are affected to any extent are Tetofsky, Juicy White and Clarlamoff. The American varieties that were practically free from fungus are the Okabena, Whitney No. 20, Thompson and Magog. The crab apples as a class were so badly affected by the scab fungus that all the varieties were a failure, and there is little else to report about them.

Of the lessons learned the past season one is that I have my plum and apple trees growing too near together; therefore I have been thinning them out. It seems that a large amount of sunshine is essential to perfect fruit. I also have to modify my views somewhat about windbreaks. We are now trimming them up and otherwise thinning them out about the orchard wherever they present a solid wall to the wind.

Evergreens of all kinds grown have done very well. Those which were standing in sod grew fully as much as those that were well cultivated. The varieties we have had an opportunity to test this way are Scotch pine, white spruce, red cedar and Black Hills spruce.

ANNUAL MEETING NORTHEASTERN IOWA HORTICULTURAL SOCIETY, 1903.

(Held at Decorah, Iowa, Dec. 16, 17 and 18.)

L. P. H. HIGHBY, ALBERT LEA, DELEGATE.

The city of Decorah is located in the valley of upper Iowa River. The immediate surrounding country is rather unique and differs considerably from anything else seen in that part of Iowa, consisting, as it does, of big hills and boulders overgrown with forest vegetation, mostly oak and some pine. The soil is a yellow, porous clay, while the rock at places come to the surface. I enjoyed the sight of

THE "DUGWAY" ON THE OUTSKIRTS OF DECORAH, IOWA.

some perfect arbor vitæ hedges and extra fine specimens of sheared spruce and cedar on the lawns of the city.

The hospitality of the city of Decorah was shown in various ways. For instance, we were all given a ride about the city, during which we take notice of the fact that nearly every window in the public school was filled with flowering pot plants.

Of visitors the meeting was favored with the presence of the following gentlemen: Wm. Toole, of Baraboo, Wis., as delegate of the Wisconsin State Horticultural Society; N. W. Antisdel, of Milford, Iowa, as delegate of the Northwestern Iowa Horticultural Society; A. J. Philips, West Salem, Wis.; Prof. Wesley Greene, of

Des Moines, Iowa; Prof. Little of Ames, Iowa; and Silas Wilson, director of horticulture of Iowa.

The meeting elected the following executive officers for the coming year: President, W. H. Guilford, Dubuque; vice-president, Rev. C. A. Marshall, Cresco; secretary, J. C. Ferris, New Hampton; treasurer, E. Blakeman, Decorah.

The next annual meeting of the society will be held at West Union, in December of 1904.

The exhibition of apples was quite good considering the season. A number of newer varieties of apples and seedlings were shown. Among the named varieties the Windsor Chief was generally admired. Mr. Patten exhibited a seedling of Ben Davis by the Jonathan. The fruit resembled both parents and was interesting.

Mr. Ivins exhibited his seedling, Ivins' Pippin. The fruit is large, and the tree is said to be of the first degree of hardiness. It should be experimented with in Minnesota. The same gentleman exhibited the Hinckley seedling. The original Hinckley tree died four years ago and was then about sixty years old. It is said to be hardy and has a good record as a bearer. The fruit is reported to keep till June.

Mr. Toole exhibited a seedling found in a pasture near his Wisconsin home. Mr. Reeves exhibited a seedling grown by H. L. Ayers, of Cedar county. As a fruit it was interesting and very good, but the tree was not supposed to be extra hardy; however, it will soon be in the market, and our experimenters should try it.

Mr. Ivins in his paper on "Production of New Varieties" spoke favorably of the Hinckley seedling, the Ivin's Pippin and also described the Adamson as a very large, beautiful yellow fruit having borne many heavy crops. The Rankin seedling he recommended for a late fall apple. It begins bearing very young and will, when better known, be planted generally. Mr. Ivins had come to think more of the "Arctic" every year and had planted out 300 trees in his orchard. The Dickinson Seedling No. 1 was given the reputation of being a grand September apple of large size and firm quality; it is a seedling of the Duchess, of mammoth growth and enormous size of foliage; will root well from the scion.

The committee on seedlings asked for more time in which to study the seedlings before reporting and was continued. The chairman however made a statement to the effect that the district had some fifteen good winter seedlings and about thirty fall and summer varieties, and that the state of Iowa would soon have an improved line of apples.

The premiums on seedlings were not awarded, the judge, Prof. Little, desiring to test the keeping qualities of the fruit. According

to reports read Northeastern Iowa had had a strawberry crop of 100 per cent; raspberries and blackberries, fair; apple crop, uneven. Orchards bloomed freely, the fruit dropped badly and was much affected by scab; trees blighted badly. The season had been favorable to wood growth, and prospects for fruits next year are good at the present.

In a paper on "Care and Marketing of Small Fruits," by Mr. True, of Edgewood, the reader dwelt upon the necessity of giving better care to the small fruit plantation and not undertaking too much; of directing the form of plant according to suggestions of nature. Clean cultivation was the ideal, but it was at times better to mulch and save labor. A lively and profitable discussion followed this paper. The Concord, Moore's Early and Worden were favored among black varieties of grapes. The Campbell's Early will color as early as Moore's Early but is not really ripe before a good while later. It was agreed that Moore's Early would stand more manure than any others. For favored and southern locations the Agawam was spoken of as paying, it being possible to keep it for weeks in cellar. The earlier grapes bring the best price. Moore's Early was generally conceded to be the thing. It should not be pruned as severely as other varieties. The different varieties of grapes should be pruned in a different manner. Delaware should be cut back to the ground every year and allowed to make four or five new vines, to grow in a fan shape; would then bear heavily. The sun should be given a chance to strike the ground all over the vineyard so as to warm it up.

Mr. Antisdel, of Milford, spoke highly of a new raspberry, dwarf and purple, named "Iowa;" it was said to be well adapted to the prairie soil.

Mr. Wm. Toole, of Wisconsin, read a paper on "Apples of Wisconsin," and commended the Wealthy, Newell's Winter, Plumb Cider, Fameuse, Seek-No-Further and others. In the discussion the Newell's Winter was condemned as a slow, shy bearer not hardy on the prairie soil.

Mr. Mitchell, of Cresco, in a paper, spoke well of the Russian varieties and was sustained. It was said that many of the Russian varieties sold well in the market.

Mr. C. G. Patten read a paper on "A Lesson in Pollination of Fruits." It was said that very often pollen was washed off or destroyed by unfavorable weather and a crop lost as a consequence. It was important in growing strawberries that there be two varieties to act as pollenizers, of different seasons, so that if one, on account of weather, failed, another would be there to take the place later. In plums four or five varieties should be planted together.

Mr. Patten related his experience in bringing pollen of the Bartlett pear from California to Charles City. The pollen was transported 2,000 miles and kept for thirty days before being applied to the flowers of one limb of a Kiefer pear tree. The result was that pears were secured on that limb but not on any other part of the tree.

Two papers were read on the subject of spraying, one by Mr. Reeves, of Waverly, the other by Prof. Little, of Des Moines. It was agreed that spraying was necessary and to be recommended. As to methods, there was more than one opinion, some holding that dust spraying was preferable. Prof. Little found the water mixture more effective; perhaps dust preferable early in season on frosty mornings.

Mr. Guilford read a very inspiring paper on "The Horticultural Volunteer."

Prof. W. Green, of Des Moines, on subject of "Some Mistakes in Gardening," recommended late fall plowing for the garden, as it killed insects and gave the frost a better chance at the soil, which would in this way be well prepared for the seed in the spring. Soil should be worked so as to be fine and not too loose. People often made the mistake of working soil too much when wet and not enough when dry. The professor believed in thinning fruit more than is generally done. Small plants should not be puddled when transplanted, but roots washed clean.

The praise of the Wealthy apple was sounded in no uncertain manner during the meetings, very especially by Mr. Silas Wilson, who told of how it was being planted by the thousand in Michigan, New York, in the mountain region and on the west coast. The Wealthy was said to be easily the king of all as a cold storage apple.

A splendid public entertainment was given in the opera house by the citizens of Decorah on the evening of the 18th.

The meetings as a whole were very interesting and instructive, and there was plenty of evidence that the Iowa horticulturists are alive and doing.

PLUMS IN THE CHICKEN YARD.—A writer in the Indiana Farmer says: Theories vanish by the side of facts in every avocation. I have at the present writing three Robinson plum trees loaded with ripening fruit and two others with not a plum left. The five trees were set on the same kind of ground seven years ago and have had the same culture. The same results have been derived for the past three years, the three trees bearing a full crop of sound plums and the two a crop of wormy fruit worthless. The three fruiting trees are in the chicken yard; the others outside The ground in said yard is not plowed, but early in the spring is swept and kept hard and smooth. Under these trees I scatter bran and screenings

FRUIT LIST FOR 1904.

Adopted by the Minnesota State Horticultural Society, Dec. 3, 1903.

FOR THE GUIDANCE OF PLANTERS IN MINNESOTA.

Apples.

Of the first degree of hardiness for planting in Minnesota: Duchess, Hibernal, Charlamoff, Patten's Greening.

Of the second degree of hardiness: Wealthy, Longfield, Tetofsky, Malinda, Okabena, Peerless.

Varieties for trial: Repka Malenka, Anism, Yellow Sweet, Kaump, Brett, Northwestern Greening, Scott's Winter, University, Newells, Lowland Raspberry, Estelline, Jewell's Winter, Yahnke, Iowa Beauty.

Valuable in some locations: Wolf River, McMahon, Yellow Transparent.

Crabs and Hybrids.

For general cultivation: Virginia, Martha, Whitney, Early Strawberry, Minnesota, Sweet Russet, Gideon No. 6, Briar Sweet, Florence, Transcendent.

Varieties for trial: Lyman's Prolific, Faribault, Shields.

Plums.

For general cultivation: Desota, Forest Garden, Weaver, Cheney, Wolf, Rollingstone, Wyant, Surprise.

Most promising for trial: Ocheeda, New Ulm, Stoddard, Mankato, Aitkin, Brittlewood, Compass Cherry.

Grapes.

In order of ripening: Moore's Early, Worden, Janesville, Brighton, Delaware, Agawam, Concord, Beta.

Raspberries.

Red varieties: Turner, Marlborough, Cuthbert, Brandywine, Loudon, King.

Black and purple varieties: Ohio, Palmer, Nemaha, Gregg, Older, Columbian, Kansas.

Blackberries.

Ancient Briton, Snyder, Badger.

Currants.

Red Dutch, White Grape, Victoria, Stewart, Long Bunch Holland, North Star, Pomona, Red Cross.

Gooseberries.

Houghton, Downing, Champion, Pearl.

Strawberries.

Perfect varieties: Bederwood, Enhance, Lovett, Splendid, Mary, Clyde, Senator Dunlap.

Imperfect varieties: Crescent, Warfield, Haverland.

Native Fruits.

Valuable for trial: Dwarf Juneberry, Sand Cherry, Buffalo Berry.

Mr. Kellogg (Wis.): I would suggest a caution in regard to the Senator Dunlap strawberry. If it is not restricted in its growth it will disappoint you.

Mr. Clausen: I would like to ask the reason why the Martha crab is cut out.

The Chairman: I can tell you the reason. It is so generally unfruitful that it is not a success. In some places it does well.

ORNAMENTAL TREES AND SHRUBS ADAPTED TO PLANTING IN MINNESOTA.

REPORT OF COMMITTEE ON ORNAMENTAL LIST, ADOPTED DEC. 2, 1903.

The following list is based upon the report adopted by this society and published in the volume for 1897. Some additions and corrections have been made, and the nomenclature has been revised to conform to that of Britton's Manual and Bailey's Cyclopedia.

The plants marked with a star * are native to the state. Those marked with a + are doing well at Montevideo, where the average rainfall is less than 21 inches, and may be expected to succeed with good cultivation throughout the prairie portion of the state.

DECIDUOUS TREES.

Bur Oak (Quercus macrocarpa).*+
Scarlet Oak (Quercus coccinea).*
Black Oak (Quercus velutina).*
White Oak (Quercus alba).*+
Green Ash (Fraxinus lanceolata).*+
American White Elm (Ulmus Americana).*+
Cork Elm (Ulmus racemosa).*+
Red Elm (Ulmus fulva).*+
Nettle-Tree (Celtis occidentalis).*+
Silver Maple (Acer saccharinum).*+
Sugar Maple (Acer saccharum).*(1)
Norway Maple (Acer plantanoides).+
Red Maple (Acer rubrum).* (2).
Box Elder (Acer negundo).* (3).
Cottonwood (Populus deltoides).* (4).
Bolle's Poplar (Populus Bolleana).+ (5).
Willow (Salix fragilis).+
Willow (Salix vittelina).+
Willow (Salix vittelina Britzensis).+
Willow (Salix alba).
Bass-Wood (Tilia Americana).*+ (6).
Kentucky Coffee Tree (Gymnocladus diocia).*+
Paper Birch (Betula papyrifera).*
White Birch (Betula alba).
Wild Red Cherry (Prunus Pennsylvanica).*+
European Mountain Ash (Sorbus Acuparia).+
Oak-Leaved Mountain Ash.
American Mountain Ash.

CONIFERS.

White Spruce (Picea Canadensis).*+
Colorado Spruce (Picea pungens).+
Colorado Blue Spruce (Picea pungens cerulea).+
Norway Spruce (Picea excelsa).
Douglas Spruce (Psudotsuga Douglasii).+

Yellow Pine (Pinus ponderosa).+
Austrian Pine (Pinus Laricio Austriaca).+
Scotch Pine (Pinus sylvestris).+
White Pine (Pinus Strobus).* (7).
Red Pine (Pinus resinosa).*
Gray Pine (Pinus divaricata).*
White Cedar (Thuja occidentalis).*
Red Cedar (Juniperus Virginiana).*+
Swiss Mountain Pine (Pinus montana).+

WEEPING DECUDUOUS TREES.

Wier's Cut Leaved Maple.
Weeping Cut Leaved Birch.
Weeping Mountain Ash.
Wisconsin Weeping Willow.
Napoleon Weeping Willow.
Royal Weeping Willow.

SHRUBS.

Syringa vulgaris (Lilac).+
Syringa vulgaris alba (White Lilac).+
Syringa vulgaris Var. Charles X.+
Syringa Josikaea.+
Syringa villosa.+
Syringa Persica.+
Syringa Persica alba.+
Syringa Japonica (Tree Lilac).+
Philadelphus pubescens (Mock Orange).+
Philadelphus coronarius.+
Philadelphus Zeyheri.+
Philadelphus laxus.+
Philadelphus microphillus.
Philadelphus inodorus.
Viburnum lentago (Nanny berry).*+
Viburnum opulus (Cranberry Tree).*+
Viburnum opulus sterilis (Snowball).*+
Viburnum latana (Wayfaring Tree).*¾
Lonicera Tartarica (Bush Honeysuckle)+ in various colors, white and red.
Lonicera Tartarica parviflora.+
Lonicera Morrowi.+
Lonicera Ruprechtiana.+
Lonicera spinosa.+
Lonicera diocia.*+
Sambucus Canadensis (Sweet Elder).*+
Sambucus racemosa.
Sambucus pubens.*+
Amelanchier Canadensis (June-berry).*+
Amelanchier Botryapium.+
Amelanchier alnifolia.*+
Crataegus coccinea (Scarlet Thorn).*+
Rosa rugosa.+
Opulaster opulifolius (Ninebark).+
Opulaster intermedius (Prairie Ninebark).*
Spiraea Van Houtei.+
Spiraea Pikowiensis.+
Spiraea prunifolia flore pleno.
Spiraea Bumalda.
Spirea Bumalda var. Antony Waterer.+
Spiraea salicifolia.*+
Spiraea tomentosa.*
Sorbaria sorbifolia.+
Prunus Besseyi.*+
Prunus Virginiana.*+
Prunus demissa.+
Prunus padus.
Prunus nana.+

Prunus tomentosa.+
Lepargyraea argentea (Buffalo-berry).*+
Elaeagnus argentea (Silver-berry).*
Elaeagnus angustifolia (Russian Oleaster).+
Berberis vulgaris (Barberry).+
Berberis Amurensis.+
Berberis Thunbergii.
Caragana arborescens.+
Caragana frutescens.+
Caragana pygmaea.+
Rhus hirta.*
Rhus glabra.*+
Rhus aromatica.+
Rhus cotinus (Smoke Bush), at St. Anthony Park.
Rhamnus cathartica (Buckthorn).+
Cornus stolonifera.*+
Cornus Amonum.*
Cornus Baileyi.*
Cornus alternifolia.*+
Symphoricarpos racemosus (Snowberry).+
Symphoricarpos occidentalis (Wolfberry).*+
Amorpha frutescens.*
Amorpha nana.*+
Amorpha canescens.*
Salix caprea.+
Salix discolor (Pussy Willow).*
Salix humulis (Prairie Willow).*
Salix lucida.*

SHRUBS WITH COLORED FOLIAGE.

Berberis vulgaris atropurpuria (Purple Barberry).+
Sambucus Canadensis aurea (Golden Elder).
Sambucus Canadensis variegata.
Philadelphus Coronarius aureus (Golden Mock-Orange.)+
Golden Spruce.

VINES.

Lonicera Sullivantii.
Parthenocissus quinquefolia (Virginia Creeper).*+
Parthenocissus quinquefolia Engelmannii.
Parthenocissus quinquefolia radicantissima.
Parthenocissus quinquefolia muriorum.
Vitis vulpina (Wild Grape.)*+
Clematis Virginiana (Virgin's Bower).*+
Clematis paniculata.
Celastrus Scandenis (Bitter-sweet).

NOTES.

1. Sugar Maple requires shelter and moist soil.

2. The scarlet maple is a native tree along the borders of swamps, and should only be planted near water.

3. Box-Elder should only be planted as a temporary shelter belt on the prairie. The tree is so badly infested with vermin that it should never be planted as a street tree or about a residence.

4. The Cottonwood should never be planted on high dry land. On the borders of lakes and streams it grows to be a noble tree. Carolina Poplar is a staminate form of the Cottonwood.

5. Bolle's Poplar is a tall, fastigiate, silver-leaved tree, valuable when cautiously used for landscape effect.

6. Basswood requires shelter and deep rich soil. On the prairies it should be allowed to sprout freely and be treated as a shrub.

7. White Pine should not be planted on the western prairies. It does well in sheltered locations in the eastern half of the state.

FRANK H. NUTTER,
L. R. MOYER,
Committee.

The Chairman: This is a very interesting and carefully prepared report and contains much that might be discussed to advantage. I would say to those who are not familiar with the names as given by Mr. Moyer that they are harmless. They are only names. (Laughter.) There are a whole lot of names that I am not up to yet. Judge Moyer has the time and the disposition to read all the journals and bulletins, and he knows how to keep them straight. Well, that is all right, he deserves credit for what he does. Those confounded botanists, if they only had to sell nursery stock they would not be changing the names all the time. I have got way behind, and I am going back to the old fashioned names, because the botanists have a way of changing the names around to suit themselves, and I am going back to the common names.

Mr. A. Brackett: I would like to know the difference between the dogwood that grows in the swamps and the dogwood that grows on the high land.

Mr. Moyer: There is some difference, but generally they are almost identical. The one that grows in swamps sprouts from the roots.

Mr. Brackett: If both were planted on the same kind of ground would they do equally well?

Mr. Moyer: I think so. It will do very well on high ground if you give it cultivation.

Mr. Yahnke: I would like to ask Mr. Moyer to name three shrubs and three evergreens that could be recommended for planting in his section on school grounds and farm homes, and that would stand bad treatment.

Mr. Moyer: After the name of each variety that grows at Montevideo I put a cross, while those that grow in other parts of the state are not so marked.

Mr. C. G. Patten (Iowa): I would like to ask Judge Moyer whether the white barked linden is a tree that succeeds well in the west.

Mr. Moyer: I have not seen it.

Mr. Patten: I saw one on a trip I made to South Dakota that was very beautiful. The man had the common linden, the gray bark, and also had this variety which was apparently as white as the cottonwood. I do not know the name of it, only he called it the white linden.

Mr. C. E. Older: I would like to ask Mr. Moyer, if instead of having this long list of hard names whether it would not be better to have a list of about twenty-five that could be generally recommended. Would it not be better to give only a list of the hardiest instead of including all those on that list?

Prof. Hansen: I think Judge Moyer and others would reduce the list if Mr. Older would reduce the list of apples to twenty-five.

Mr. Moyer: So far as my own experience is concerned I would move to strike the Norway spruce from the list.

Mr. Yahnke: I was never in a horticultural meeting where there was anything good said of the Norway spruce, but all the same it is the best tree I have got. I was in Montevideo, and I

passed Judge Moyer's house. It is a very beautiful place, and I enjoyed the view very much. His light shines, but it does not shine far enough. I was east of him and went through a dry creek bottom, and it was the most forlorn and forsaken looking place I ever got into. They had a school house there, and I tell you the fox and the wolf said good-bye to that place, they would never meet there again! (Laughter.) Is that not the case all over our state? I have yet to come to a place where the school house is the most prominent place in the community, and I tell you it is a disgrace to the public. Why do we not get together in each district and make a movement to improve our school grounds? It is a contemptible shame that our children have to spend the best part of their lives in a place where there is nothing to see but a wilderness of weeds, and where we would scarcely turn in our cattle because they might starve or become poisoned. (Applause.)

Mr. Cowles: I would like to ask Judge Moyer what he has against Norway spruce. I have some Norway spruce that I grew from one to two inches that are twenty-five feet high today.

Mr. Moyer: The only objection I have is that I planted several at an early day and after growing some time they died. I still have one growing in a ravine where the soil is moist, and it is doing pretty well.

Mr. Canby: I have Norway spruce at Canby that are doing well.

Mr. S. D. Richardson: The Norway spruce in our part of the state is very difficult to grow when small, and when it is large I would much rather have a white spruce in its place.

Mr. Older: We had considerable experience with Norway spruce and other evergreens. In exposed situations the Norway spruce while young is liable to turn yellow. At Larchwood, across the state line, they were doing wonderfully well, and Mr. Brown, the forester, said they were doing all right. As a matter of fact they shed their leaves when ten inches to a foot high, and last spring I made up my mind that they want protection from the stinging winds when small. I prefer the white spruce, however. It is a little stronger tree, but does not grow quite so high.

Prof. Hansen: Mr. Older is in the southwestern part of Minnesota, and his experience is more or less unfavorable to the Norway spruce, and Judge Moyer is in the west central part of the state. My own experience in South Dakota, eighteen miles from the Minnesota line, is unfavorable to the Norway spruce. I would like to ask Mr. Norby what his experience has been at Madison, in South Dakota.

Mr. Norby (S. D.): I cannot expect to give as long a list as that given in the report from your state. The farther east we go the larger we find them, and they have varieties in the eastern and northeastern part of the state that do not do well with us. The Norway spruce with us is not much of a success. The first evergreens I planted were the Norway spruce, but I have none now on my place, and I do not believe I shall plant any more. I have seen some fine specimens of Norway spruce at Yankton, and they are

good sized trees, but I think in our section of country we have something better. However, as we go east the Norway spruce does better.

The Chairman: I would like to ask Mr. Norby how the bull pine is doing in his section.

Mr. Norby: Well, the bull pine is altogether the best variety I have. It has done first rate. I gave it a very severe trial; I stuck it out on the prairie sod, and it is a thrifty tree today.

Mrs. Jennie Stager: The second year after I joined the society Prof. Green sent me some seedlings of the Norway pine, and I still have eleven out of the dozen. All over our part of the state there are some larger than mine.

BRIDAL WREATH SPIREA (SPIREA VAN HOUTEI.)

Mr. W. L. Taylor: I hate to see the Norway spruce stricken from the list, because at Litchfield it is the best tree we have, except in a very dry season, when some will kill out. I know some in our section that the owners would not take $500 apiece for.

Mr. O. W. Moore: The discussion seems to indicate that the western part of the state is not so favorable for the Norway spruce as the eastern part of the state. In the eastern half of the state it seems to be all right. It seems to do well with us in Fillmore county, and it seems to be thriving all over the eastern part of the state.

Mr. Older: I have attended the meetings of the South Dakota Horticultural Society. They have divided the state into districts. The southern part of the state does not compare with the central and northern any more than New York compares with Minnesota. Their conditions are entirely different, and in this state it is a great deal the same way. In our part of the state if we plant Norway spruce it is simply thrown away, and if we plant a lot of them we may save one of two. The Norway spruce wants protection from the winds. I found at Woonsocket if you plant apple trees east on the sandy land and plant them shallow, they will surely die, and if you go north on the gumbo land and plant them deep they will die. If the trees are to live they must be planted deep on sandy land and on gumbo land they must be planted about as they were in the nursery row.

The Chairman: I would like to say that the Norway spruce is the most desirable spruce, is the most desirable tree to plant in the state. I will say that it will produce from sixty to one hundred cords of wood in thirty-five years, pulp wood, worth from six to seven dollars per cord at the mill. I think it can be planted for profit, and the Minnesota forestry reserve board is going to take up this matter.

Mr. Moyer: About two-thirds of our trees are Scotch pine, and about one-half the remainder are Austrian pine, and we have about the same number of pinus ponderosa. The Scotch pine are about six feet high, the Austrian pine about half as high and the pinus ponderosa a little higher than the Austrian. They all seem very hardy.

Mr. Yahnke: Would they not make a good windbreak?

Mr. Moyer: I think so, although I think they would lose their lower branches and become open. I might also speak about the white spruce. It has done very well with me. Thirteen years ago I planted thirteen white spruce, and they are all alive today, and they are placed where they get a good sweep of wind.

Mr. S. O. Tuve: Is there any difference in hardiness between the Black Hills spruce and the ordinary spruce?

Prof. Hansen: The Black Hills spruce is our hardiest form of spruce. I think there may be a slight difference between the two. I think Mr. Norby has had more experience, and he may be in a position to tell the difference if there is any. I think those from the far east are not adapted to the west.

Mr. Norby: I had the two growing for several years. I think there is some difference, especially in hardiness, as the Black Hills spruce is the hardier of the two. The white spruce stands very well with us after it gets two or three feet up, but before that the sun will sometimes burn the foliage in winter. The Black Hills spruce is very hardy, but it is a slow grower and is a more compact tree than any I have.

The Chairman: Is the plant distinct from the ordinary white spruce?

Mr. Norby: Oh, yes, I can tell it every time; the needles are broader and it is more compact.

The Chairman: What would you prefer to plant in your soil?

Mr. Norby: I believe if I were planting for a windbreak I would prefer the white spruce, because it will grow a good deal faster.

The Chairman: Is it hardy enough?

Mr. Norby: Oh, yes, it is hardy enough.

Mr. Philips: What is the difference in the timber for pulp wood or otherwise between the European larch and the Norway spruce?

The Chairman: The larch is not used much. However, they make paper of almost any wood. I have seen paper made of beech, and I have seen it made from maple, but they have not worked the larch very much. I think it is because it works too hard. I have seen paper made out of white pine and balsam fir.

Mr. Philips: I would not have the Norway spruce stricken out. It is a magnificent tree. I planted one hundred of them to protect my apple trees, and they are now magnificent trees. I planted at the same time a European larch, that is forty-six inches in circumference, while the Norway spruce is twelve inches in diameter. The larch grows much faster than the spruce.

Mr. S. O. Tuve: I tried the two varieties of the spruce side by side, and I can see no difference. One is just as thrifty as the other.

Prof. Hansen: How far east did you get them?

Mr. Tuve: I got them in Illinois.

Mr. Norby: It seems to me it makes a difference where the seedling is grown. You take the blue spruce grown in the east and plant the seedlings out there on the prairie, and you will find they are not nearly as hardy as those grown in the mountains. I had a lot of seedlings from Illinois, and they were tender. I also got some collected from the mountains in Colorado, and those trees were very much hardier than those I got from the east. I believe there is a great deal in that. I believe it makes a difference where the seeds are sprouted, whether in the east or in the west.

Mr. A. F. Collman (Iowa): I am very much interested in this evergreen discussion. I used to be called the "evergreen crank." In 1872 I settled down on the prairie in southern Iowa, and I planted quite a good many evergreens, among others quite a number of Scotch pine. They grew rapidly from the first, and now they are from two feet upward in diameter. They commenced to die from the top and became very unsightly, and I would not plant any more Scotch pine. The white spruce I think are beautiful, they are a thing of glory. The white spruce and balsam fir are growing finely and hold their color nicely. The Norway spruce is as good a tree as the white pine. I would not recommend the Scotch pine. I obtained my plants from the north.

Mr. Cowles: I have tried the white spruce and the Black Hills spruce. I got the plants from the Black Hills and set them out on the same day I did the white spruce, and the white spruce are one-third larger than the Black Hills spruce.

Mr. Patten: I think there should be a distinction plainly drawn between the Norway and eastern form of Black Hills spruce. It is true the Black Hills spruce is very distinct from the Norway and eastern spruce in its form and growth. It is very symmetrical, the foliage is fine and of a very dark color, while the other spruce is quite light in color and a much more rapid grower and more compact. They are well adapted to the climate in which they originate. It seems to me the Wisconsin form of white spruce should be especially grown in eastern Minnesota and all of Wisconsin and also, of course, the Black Hills spruce, because that is an ornamental tree, but it grows more slowly. The nurseryman can scarcely afford to grow the Black Hills spruce unless he obtains about twice the price for nursery grown trees.

I want to refer a moment to the remark made by Judge Moyer about the Scotch pine losing its foliage. I think it is the experience of every one on the prairie that they do lose their foliage and do not do as well as the deciduous trees. They have been planted so as to be protected from the sweep of the wind, and it makes a great difference when we have even a slight protection of deciduous trees as to how we succeed with the evergreens. It is true of the Norway spruce and of the white spruce, not so much of the Scotch pine, but in the western part of the state and in Dakota even the Scotch pine may be protected by trees that are perfectly hardy, like the white ash, and it requires only a little protection from the sweep of the winds to have evergreens, even on the wind swept prairies of the Dakotas.

Mr. J. M. Mitchell (Iowa): I might say something about the Black Hills spruce. I have some specimens that are eight feet high. I got about one thousand from the Black Hills some eight years ago, and I have specimens now eight feet high, and since then I have received some more. I think they are some of the finest evergreens we have. They do not grow quite as high as the white spruce, but I think they are superior in that they are of compact growth. The foliage varies somewhat, and there are many specimens among them nicer than the picea pungens, but there are many of the Black Hills spruce that come near it in beauty, and as far as rapid growth is concerned trees that I furnished to other parties made a growth of twenty-two inches last summer. That is more than they usually make. They usually make a foot of growth.

Covering Grass Seed on the World's Fair Lawn.—"The seed was sown broadcast by hand, one pound to each one hundred square feet. The seed was covered with what he calls a choppy motion. A gardener goes over the lawn with a rake, and instead of raking and rubbing the seed in, he swings it slightly and allows the teeth to enter the soil about an inch. When the rake is lifted the soil is turned under for about half an inch. The pulverized soil must be treated to fasten the seed in the ground. On the comparatively level places, a heavy roller is used. On the terraces—and some of the World's Fair terraces incline at an angle as great as 30 degrees—a 'pounder' is used. This is a board a foot wide and a foot and a half long, fastened to a handle with blocks added until it weighs about 15 lbs. The surface is tamped with this.'

REPORT OF COMMITTEE ON PROTECTION OF SONG BIRDS.

MRS. J. B. HUDSON, LAKE CITY, CHAIRMAN.

We have done little more than get in a wedge this year before the Educational Association, but the chair was instructed by a unanimous vote to appoint a committee of five to confer with the State Horticultural Society committee and present the matter before this body next year. We were late in seeing the secretary, and the programs were printed. They tried to do the best they could. I think next year we may be able to do some very effective work. I have a systematic outline that I think could be carried out through the grades and the high school very nicely, and as soon as the educational committee is named we will go to work. I also think the work could be given some prominence in the Women's Federation of Clubs, thereby enlarging the field, and the knowledge and interest will gradually spread. Regarding the twenty-four letters received from county superintendents, most of them say "we have done and are *doing nothing* to protect the song birds;" a very few have given a few words to the subject in their short addresses. One man tells me it is not necessary to do anything in his county because not *a boy* in the county would kill or rob a bird. I was more than delighted to think a county superintendent was so thoroughly in touch with every boy in the county. But again, he said nothing about the girls. Will *they* wear plumages? Something might be done now for the pleasure the study naturally affords if not for protection. Most of the answerers are willing to co-operate with the Horticultural Society if they know how. Would it not be well for some one to visit some of these county meetings and start the work going? I intend answering some of these letters as soon as I have the time and give them desired information as to how they can assist in the work, and where they can get material and reading matter on the subject.

I am sorry we could not do more before the association but coming so soon after the horticultural meeting it did not give us time to work.

PROTECTION OF STRAWBERRY VINES AGAINST FROST.—As soon a cultivation ceases, the bare ground between the plants should be covered with manure to protect the roots from the first hard freezing weather. Later when the ground is frozen, the whole bed, leaves and all, may be covered with manure to the depth of 3 inches. This is not to be removed in the spring, but if it be so strawy that some of the plants may be unable to push through they should have a little assistance. I consider that this heavy covering of manure is of the greatest importance. Even if the previous work has not been very thorough, this will bring success. It will also conserve moisture and keep the berries clean.—Anon.

NORWAY SPRUCE AT STATE EXPERIMENT STATION.

Illustration shows growth of Norway spruce in our "forest garden" at the Experiment Station. On the right are two Norway spruce, and at the left one white spruce. It will be noted that there is very little difference in the size of the two kinds. These trees are seventeen or eighteen years old from the seed and have been growing in their present position for fourteen years and both kinds are especially thrifty. PROF. S. B. GREEN.

The replacing of missing vines in a vineyard is a perplexing task sometimes. If a new vine is planted, the old ones on each side seem to take up the fertility and moisture in the soil, making growth very slow, if it succeeds in living at all.

I have found this method a very good one: Early in the spring select a strong cane of the previous season's growth, as near the end of the vine as possible. Cut off about 1 foot from the end to make sure of healthy wood. Carry the cane along the lower wire to the vacant place where the vine should be and lay the cane in a trench for a distance of 12 or 15 inches and 12 inches deep, filling the hole with top soil pressed firmly around the buried cane. A pint of bonemeal put in the bottom of the trench and mixed with the soil will help the growth of the roots. The parent vine nourishes the cane, and after two or three years it can be cut loose and a new vine established.

Secretary's Corner.

LIFE MEMBERSHIP ROLL.—One addition has been made to the life membership roll since the annual meeting, the name of Mr. Thomas Lowry, of Minneapolis.

HAVE YOU SENT IN YOUR NEW MEMBER FOR 1904?—The annual membership roll for this year stands (Jan. 23) at 729, which is something over 100 more than last year at this time. We are in hopes to keep ahead of last year's roll continuously through the year and can easily do it with the help of our members. A good many have already sent in a new member, one member having sent as high as twenty-three. The moral is self evident When shall we hear from YOU?

MORE ROOM FOR THE SOCIETY OFFICE.—A little office across the hall from the room now for so many years occupied as the office and library of the society, has been rented at $6.00 a month, to be used largely as a store room, as well as private office. This will relieve in large measure the pressure in the secretary's office and improve its apperance. Members from the city are urged to call at the office and familiarize themselves with the work of the society and look over the library. There are many valuable practical works on horticulture on our shelves.

HORTICULTURE AT THE FARMER'S INSTITUTE.—The secretary had the pleasure of attending the Farmer's Institute at Norwood, Jan. 5, a one day session being held at that place. Mr. Frank Yahnke, of Winona, talked upon small fruits and orcharding in a very entertaining and instructive way. His work at the Farmers' Institute is proving to be a very satisfactory one, and we learn that he stands high with the other members of the institute corps. Through his efforts and Mr. Forest Henry's, in the same corps, a good many annual members have been added to the society roll this year already.

HAVE YOU RECEIVED THE 1903 REPORT?—If you have not and live in or near Minneapolis will you please call at the secretary's office for it? In mailing the report the book is liable to be more or less injured, while by getting it directly from the office it will find its way to your library in good condition. No reports are sent out by mail in the city, as the postmen do not carry such heavy books but refer the persons to whom they are directed to the post office to get them. Those living at a distance from Minneapolis and whose reports have not been received will kindly notify the secretary.

A FAVORABLE WINTER FOR FRUITS.—Reports from many points in the state indicate that thus far, Jan. 23, has been a very favorable winter for all kinds of fruits and especially for apple trees. With every day the probabilities grow that the coming season is going to be a splendid one for the orchards of Minnesota, and it is especially desirable that this should be the case as we are anxious to make a magnificient fruit display at the St. Louis exhibit. Opportunity will be given to all of our members to contribute to this purpose, and a faverable season is right in line with our wishes in this direction.

Since writing the above and before going to press, we have had a spell of "old fashioned" weather that sets us all "guessing."

A NEW YELLOW RASPBERRY.—Mr. Louis Anderson, superintendent of the Rochester Fruit and Plant Nursery, at Rochester, Minnesota, has sent to this office samples (in glass bottle) of a new kind of raspberry, belonging to the black cap family, of which he thinks very highly. He describes it as follows: "The mother bush is now five years old and has produced three full crops of berries *without any winter protection.* The berries are of orange color, firm and of good quality, the canes are very strong growers and of a brass-yellow color. The color of the berries, I suppose, is a drawback to them, but outside of that bush and berries are all right."

THE TREE PEDDLER.—"As to the peddler you inquire about, probably the scientific specifications would elucidate the matter, and if not plain enough yet, probably Dr. Wilcox can find the species, to-wit: Dedravendor paripatheticus verdans. He is generally found horseback or in a buggy, rarely afoot; his summer occupation is generally that of sucking innocent novices in orcharding. Seems to be shy of old pomologists. There is no known insecticide that will affect him, and it is even told he fattens in alcohol; certainly to my own knowledge tobacco smoke seems to have an exhilarating effect on him."—Written by a twin brother of Mr. Frank Yahnke. (Contributed by Prof. R. S. Mackintosh, Auburn, Ala.)

SHALL THE NATION OWN THE BIG TREES OF CALIFORNIA?—A bill is before congress and now in the hands of the committee on public lands providing for the acquirement of the famous grove of big trees located at Calaveras, Cal. This grove consists of something like 100 trees ranging from 300 to 380 feet in height and from 25 to 41 feet in diameter. The desirability of preserving such specimens from the ruthless hand of the lumberman appeals to every one. They are among the real wonders of the world. Many of these monstrous trees have already been cut down, and unless the strong hand of the government interferes for their preservation, they will undoubtedly disappear before many years. Our readers who are interested in this will help along the movement by addressing on this subject the congressman from their district,—but it should be attended to promptly.

DISTRIBUTE THE SOCIETY FOLDERS.—A large edition, 25,000, of this little pink folder describing the work of the society, its publications, premiums, fruit and ornamental lists, etc., has been published and are being given away at every opportunity for distribution. Many of the nurserymen are using them in connection with their correspondence, etc., and a number of them are sent with each membership ticket, so that all of the members are having the opportunity to use them. Don't throw them into the waste basket! They are too valuable material. Reserve them for some one whom you think ought to know some of the facts contained in them, and by their judicious use much good may be done and incidentally a great many members brought into the society. Every planter in the state should have the fruit list which this contains, and a large proportion ought to be members of the horticultural society. Use this folder to advance this work.

PLAN FOR MINNESOTA FRUIT EXHIBIT AT ST. LOUIS.—Plans are now being put in shape for the installation to be erected at St. Louis upon which to exhibit the fruit of our state during the six months the exhibit is to be open, from April 30 to November 1st. These plans include cold storage facilities, with an opportunity to exhibit small fruits under double glass protection in a temperature which will insure their keeping for two or three days. There

will be above the refrigerator cases a gallery for the pleasure of visitors, etc., and in a general way the plans will be similar to those used for the Chicago exhibit. There is, however, besides this, to be an office on the ground floor on the narrow side of this installation, the space occupied being a five sided space.

A State Horticultural Society in North Dakota.—On Jan. 21, in the city of Fargo, N. D., was organized the North Dakota State Horticultural Society with an annual membership roll of about 90 in number and one life member, Chas. B. Clark of Minneapolis, also a life member of the Minnesota Society. The Grain Growers' Association was meeting in Fargo at that time and gave up the session of Thursday morning, the 21st inst., to the general consideration of the subject of horticulture. About 300 were in attendance and sufficiently interested in the program and in the organization of the society to remain until thirty minutes past the dinner hour. Mr. T. A. Hoverstad, of Crookston, a life member of this society, presided, and short talks on different horticultural themes all leading up to the general purpose of the gathering, that of organizing the society, occupied the time. Four Minnesota horticulturists beside the chairman were present and spoke from the platform, Mr. Wyman Elliot, Prof. William Robertson, Mr. A. K. Bush and Secretary Latham. Mr. A. J. Philips of West Salem, Wis., was also there with the Minnesota delegation and did loyal service. A number of North Dakota people and Prof. Greely of the Farmers' Institute spoke. It was a very interesting occasion. The offer of the Minnesota Society to take the members of the North Dakota society upon its roll during this year as on auxiliary society and to furnish them with our society publications, limited however to 100, undoubtedly had much to do with the unexpected success in creating so large a roll at the outset.

A meeting was held in the afternoon, which was very fully attended by the members of the new society, and at that time the Minnesota constitution, almost in toto, was adopted as the constitution of the new society. A full line of officers was also elected with Mr. Thomas Holes, of Fargo, as president and Prof. C. B. Waldron as secretary. Another meeting was held in the evening, and many horticultural topics were discussed in a lively way. The new society starts out under the most favorable auspices, and with the push of Prof. Waldron behind it is likely to prove a great success. To Prof. Waldron belongs almost entirely, we judge, the credit of working up this organization, and we extend to him in this success our hearty congratulations.

How the World's Fair Lawn is Grown.—"The seed selected was blue grass and rye grass, mixed in equal parts. The rye grass was first in evidence, but it has done the work that was required of it and has passed away. The visitor will never know it existed, unless he makes inquiries and learns that the blue grass is indebted for much of its beauty to its less known brother, the rye grass. The rye grass peeps up in six or seven days and is a nurse crop for the blue grass. It grows taller and shields the blue grass from the sun. It is a perennial, and as it is not permitted to go to seed on a well regulated lawn it dies out and leaves the blue grass alone on the field."

1 2 3 4 5 6 7 8 9

1. Mrs. J. B. Thompson, Wayzata.
2. P. J. Bentz, Woonsocket, S. D.
3. G. J. Kellogg, Lake Mills, Wis.
4. Prof. N. E. Hansen, Brookings, S. D.
5. A. D. Barnes, Waupaca, Wis.
6. R. H. Pendergast, Duluth.
7. L. R. Moyer, Montevideo.
8. C. E. Older, Luverne.
9. Dewain Cook, Jeffers.

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Vice-Presidents' Reports, 1903.

VICE-PRESIDENT'S REPORT, FIRST CONGRESSIONAL DISTRICT.

FRANK YAHNKE, WINONA.

In the method of getting the best and most information on horticultural work in our district, I have followed somewhat the plan of my predecessor, Mr. Freeman.

I sent out about forty-five circular letters, asking eight questions, to which the following replies were received:

Question 1. What is the average per cent. of increase in the purchase of fruit trees and plants in your locality?

Answer: About 20 per cent: The poorest increase was in the southwestern part, on account of poor crops.

Question 2. What six varieties of apples for the last five years have proved the most valuable?

I give all varieties mentioned in and under this question, so take your choice: Duchess, Tetofsky, Longfield, Lowland Raspberry. Wealthy, Patten's Greening, Borovinka, Yellow Transparent, Northwest Greening, Malinda, Peerless, Plumb's Cider, Hibernal, Tolman Sweet.

Question 3. Please name the best six varieties of apples; three of crab and hybrids, four of plums, three of cherries, five of strawberries, three of currants, two of gooseberries, four of raspberries, three of grapes—for general planting.

Under this number I also give all the varieties mentioned in reply as follows:

Apples.—Wealthy, Duchess, Northwest Greening, Patten's Greening, Malinda, Okabena, Tetofsky, Peerless, Hibernal, Yahnke, Sugar Loaf.

trict a fairly good crop of apples was harvested. Strawberries were a good crop all over the district. Currants, gooseberries, plums and cherries were a minus crop. Raspberries bore a very light crop. Blackberries when covered during the winter were a good crop. Grapes did not mature very well on account of the cool, wet fall.

FRANK YAHNKE, WINONA.

In closing this report I would say that the next season's outlook is that we shall have to spray very thoroughly for fungous diseases as well as for insects. The wet seasons for the last two years seem to have increased the crop of all fungous germs to an alarming extent. Our apple crop this year showed a greater tendency to all scab diseases than heretofore. Experience shows that when we spray often and do the work thoroughly that these diseases can be kept in check almost entirely, at least to a minimum.

VICE-PRESIDENT'S REPORT, SECOND CONGRESSIONAL DISTRICT.

DAVID SECOR, WINNEBAGO CITY.

Climatic conditions for the year 1903, in this part of the state, have been unusual in the amount of rainfall and the excessive humidity of the atmosphere. Heavy clay soil not thoroughly tile drained suffered severely from this cause, especially so where the land is level and does not admit of sufficient surface drainage to readily carry off the floods, caused by the frequent and excessive rains. Many acres of land that in ordinary years are productive and respond liberally to the labors of the husbandman failed this year to yield adequate results, and in many cases crops planted on this water soaked land were total failures. Soil conditions that are detrimental to the growth and maturity of wheat, oats, barley and corn must of necessity work injury to horticulture.

In ordinary years we study how we can best get water on the land and how we can best conserve moisture. This year we have had to face the proposition of how to get rid of surplus water. A considerable interest in tile drainage is manifest on the part of many of our most enterprising and progressive agriculturists and horticulturists.

The writer corresponded with a number of the leading and progressive horticulturists of the district, with the object in view of getting information as to the yield this year of the different kinds of fruit and the varieties that they recommend for general culture. There were about seventy letters sent to horticulturists in the different counties, each requesting answers to twelve interrogatories, and a return stamped envelope enclosed, with the request that the answers to the interrogatories be made on the enclosed letters. The most of those to whom the letters were sent cheerfully complied with my request. Believing the wet season detrimental to horticultural interests, to at least some extent, I asked this question: "State if the excessive moisture this year caused any bad effects or did any damage, and if so to what extent." Of the many answers received, I have only space for a few, and they are as follows:

"Caused apples to scab. Crab apples a failure for some cause. Destroyed plum crop. Nearly killed many of the trees. Fruit buds scarce for next year's crop."

"Scab on apples damaged two-thirds of our crop, taking all of several varieties. Cannot locate cause. May have been wet weather."

"This or something else seemed to affect the foliage of most all trees, forest trees as well as fruit trees. Foliage seemed to rust in some way and wither the growth of foliage."

"Strawberry crop damaged 50 per cent by excessive moisture. Grapes damaged 30 per cent."

"Rains spoiled all the early plum blossoms. Hoppers on some kinds of apples. Many kinds of apples scabbed so they were worthless. Whether correct or not, I attribute the scab to the cold and moisture."

The quotations given above are samples of many letters received, expressing the opinion of leading horticulturists on the effects of excessive moisture.

Some state that the moisture caused the plums to crack open and injured the keeping qualities of some apples.

There was a fair crop of apples raised in this congressional district. Some varieties scabbed badly, but other varieties were free from scab and bore full crops. Duchess, Wealthy and Patten's Greening bore good crops and were comparatively free from scab. Some Wealthy trees, twenty years old, bore as many as twenty-five and thirty bushels of apples to the tree.

An orchard, of about ten acres, near Winnebago City, on the Holly farm, produced three thousand bushels of apples. The trees are mostly Wealthy.

The early plums were injured by the cold, wet weather during the time of blooming. The later varieties, such as De Soto, Wyant and Rockford, matured some fruit. Some of these trees were well loaded with fruit, while other trees of the same variety bore but little or no fruit. The fruit on many of the bearing trees injured to some extent by cracking open during the wet weather. The grapes were injured by the wet weather and did not mature as well as in ordinary years. But few cherries are raised in this part of the state, and the birds usually take the most of them. The crop was lighter than usual this year. There were fair yields of strawberries, raspberries and blackberries. There are but few blackberries planted. The currant and gooseberry crops were exceedingly light. The interest in fruit culture is on the increase. Many young orchards of hardy trees have been planted and bid fair to pay good dividends on the capital invested.

What is needed is more of the late keeping apples. The summer and early fall apples are so plentiful as to be a drug on the market in the small towns, and it is hard to sell them at any reasonable price. Late fall and winter apples always command a good price.

The list of fruits recommended for general culture in this district is the same as that recommended by the State Horticultural Society for the southern part of the state.

VICE-PRESIDENT'S REPORT, THIRD CONGRESSIONAL DISTRICT.

A. H. REED, GLENCOE.

In accordance with custom I make my first report as vice-president as to the condition of horticultural interests throughout the third congressional district, comprising the counties of Goodhue, Rice, Dakota, Scott, Le Sueur, Nicollet, Sibley, Carver and McLeod.

Owing to the lack of auxiliary organizations in the interest of pomology or horticulture, I have been unable to get in communication with the fruit growers of the different counties, as I desired, so that I could incorporate in this report the progress each county is making in propagating fruit trees and the production of fruit, especially of apples—as to the number of bearing trees and approximate number of bushels produced, varieties, etc. From this lack of a proper system to bring each county in the state into touch with our state organization, vice-presidents are unable to gather the information most essential for them to report—hence I shall confine my report to my own county, McLeod, believing it will answer for each of the other counties in the district.

The season of 1903, just closed, while the wettest since 1881, has been the most fruitful for years, especially of strawberries, plums, apples and all vegetables except potatoes, which were nearly a failure, except with those who had planted on sandy land.

The display of fruit at our county fair, held at Hutchinson, by far exceeded any exhibit ever made in the county. The abundant yield of fruit I attribute to the absence of frost at the time of blooming and the large amount of moisture that fell during the season.

Farmers have just begun to realize that apples can be produced in McLeod County as well as elsewhere, and that each can have his prairie home, as well as a timber home, surrounded by an orchard of apple trees, full of beautiful and fragrant bloom in spring time and loaded with standard fruit of almost any variety desired later in the season, thus saving the importation of thousands of barrels from York state, Michigan, Missouri and other states that now mainly supply Minnesota with apples, taking from us annually thousands of dollars.

In my opinion the great drawback to apple tree culture and the production of apples in Minnesota has been not only the loss of trees by bad handling at two and three years' growth at the time of transplanting, and up to seven years after being transplanted, but the exorbitant high prices charged by some nurserymen: "ten dollars for six" trees; $1.50, $1.25 and $1.00 apiece have been paid

for thousands of apple trees on the promise that they were sure to live, thrive and bear.

In the past year I have put in some study as to the most efficient means of strengthening our organization and to encourage all agriculturists to enter into fruit culture with more confidence and enthusiasm. It seems to me that members of this society should be authorized and encouraged by the secretary and vice-presidents to act as a committee in the county in which they reside to organize an auxiliary association in each county, which can be easily accomplished if one-half of the membership fee of one dollar be accepted in full payment for membership in state society, while the other half could go in defraying in local organization.

VICE-PRESIDENT'S REPORT, FOURTH CONGRESSIONAL DISTRICT.

B. T. HOYT, MERRIAM PARK.

As every one knows, the past summer has been a very unusual one. At one time a drought threatened us, but this was soon broken up by showers several times a week, followed by cold, gloomy weather, which made the conditions very unfavorable for some things, and especially for small fruits.

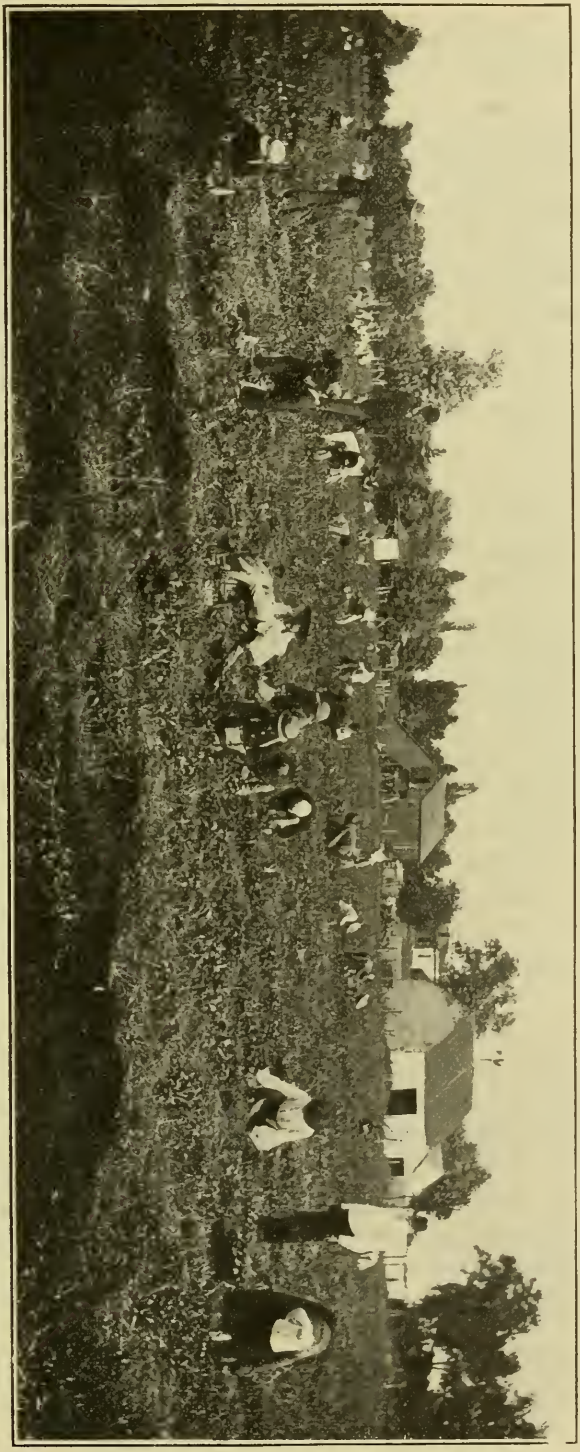
We were certainly favored with one good week for the Minnesota State Fair, but after that the rainy weather started again and did not let up until late in the fall.

Plums. The prospect for plums was very good early in the season, but the heavy winds broke quite a number of the limbs off that were loaded too heavily, and the rains cracked open a large number of the best fruit. The plum trees made an enormous growth of wood the past season.

Apples. Our Virginia crab apples bore a good fair crop, but the Transcendent crab trees were about barren. The large apples are just starting to bear, but we had some fine specimens of Wealthy, Patten's Greening and other leading varieties from five and six year old trees, some of which have borne sparingly before.

The raspberries were a fine crop this year, the Loudon and Marlborough being our two best bearers and sellers.

Strawberries also were a fine crop, but ours being mostly the late varieties were caught by the heavy rains which made it im-



STRAWBERRY HARVEST ON FRUIT FARM OF B. T. HOYT.

possible to get them picked at times, so, of course, the loss was very heavy, as it usually is under such conditions. The rains were so heavy that in some cases nearly half the berries would be washed away when ripe, or holes washed in them. We have nearly thirty varieties of strawberries fruiting, but we thin them out as we find them wanting. Some of them that did the best with us are the Bederwood, Clyde, Lovett, Warfield, Enhance, Carrie, Senator Dunlap, Sample, Aroma, Brandywine. The "Rough Rider" is certainly a rough one with us and is not worthy of trial, like a good many others with new fancy names just made up to sell. In regard to the market it would seem as though the growers of small fruits could come together and build a canning plant or plants, so that whenever the market is glutted the surplus could be canned and sold for a great deal more than selling them under those conditions. The fruit growers of Long Lake and Minnetonka have already organized and ship their goods all over the country, and they are handled by a few experienced salesmen. In this way there is no cutting of prices, etc. But with a canning plant in connection it seems as though they could guarantee a fair price and could protect their markets. They could also can their inferior berries or those which are all right, but perhaps a trifle too soft for long shipments. In this way only the *very best* should be allowed to go out and there would be no glutting of market, as in nearly every case a shipment of poor fruit will glut any market, as the dealers want the best or nothing.

The St. Paul market was saved by the large canning firms which paid seven cents per qt. for everything that was left on the market, otherwise they would have probably sold for two or three cents at times.

It means a great deal to the grower to have a place to dump his poorer products or the surplus, and it seems possible that the managers of the fruit growers' association could hire competent canners to can their surplus fruit. This would save the poor housewife, although it seems possible every grower of any size could have a plant of his own and hire the pickers to stem the berries, etc., and have an experienced person to look after it. This is only a suggestion, but the writer is figuring on a deal of this kind now, as we picked over 2,000 quarts a day last summer.

VICE-PRESIDENT'S REPORT, FIFTH CONGRESSIONAL DISTRICT.

R. A. WRIGHT, EXCELSIOR.

The fruit crop in this district the past season was exceptionally good, so far as I have been able to observe. This is especially true of the region surrounding Lake Minnetonka.

The strawberries promised a very heavy yield. This promise was fulfilled for those who uncovered their plants very early in the spring. Those who retarded the fruiting season by leaving the plants covered till late suffered loss by reason of the dry weather in the middle of June.

Raspberries were an exceedingly good crop, about one-third above the average; price fair.

Currants were a very light crop. After the first ten days of ripening the prices were exceedingly good. Gooseberry crop was an average one with good prices.

Those who had a field of blackberries were in luck. A very satisfactory yield, with good prices.

The apple crop in this vicinity was below the average, some orchards doing better than others. A few report a good yield of very fine apples of the Duchess, Wealthy and Patten's Greening varieties. These orchards were well protected from the northwest winds and were sprayed once. Cultivated young orchards suffered badly from blight—this is especially true of the Wealthy and Hibernal. Crab apples were a total failure; the leaves were badly rusted as a result of the heavy rains.

The plum crop was fair, but this fruit is not extensively raised here at present.

The grape crop promised to be large, but owing to the excessive rains and cool weather the mildew set in so badly that the Delawares and a few other varieties were nearly a total failure. Concords brought good prices.

Not being able to personally interview the prominent fruit growers of the district I wrote several letters to well known horticulturists throughout the field, and I herewith submit to you the information received.

F. H. Peterson, of Waconia, says:

"The apple crop with us was good. The Patten's Greening did the best. The Wealthy were small in size. All other varieties were equally doing their best except the Peerless, which as usual had a very light crop. I think the prospects are for a very light crop next year. No blight with us this year. Plum crop was medium."

Rockford and vicinity report "the strawberry crop about one-third above the average, which is also true of the raspberry yield.

Currants one-half crop, gooseberries fair, plums and cherries a heavy crop. Apple orchards where protected from winds produced a fair crop. Blight in some orchards but not as bad as last year. The trees came through the summer in excellent condition and made a good growth. The Wealthy, Duchess, Longfield, University and Hibernal are recommended for general planting, with the following crab apples: Virginia, Whitney No. 20, Early Strawberry and Florence."

Long Lake reports "an increase of one-third or more above the average crop of strawberries and raspberries. Currants light, blackberries good. Plum crop short on account of cold winds and rain in the spring; a light crop is reported. The following apples are recommended: Wealthy, Duchess, Patten's Greening, Northwest Greening and Longfield. Plums: Surprise, De Soto, Rockford and Hawkeye."

Eden Prairie reports "the best crop of strawberries for several years. Raspberries were unusually good. Apples were plentiful but considerably injured by black rot and mildew. Some of the Wealthy and Charlamof trees were considerably blighted. The plum crop was fair, but many of the trees were injured by lice, this pest being worse than for many years. The De Soto and New Ulm plums are spoken of very highly. The Flemish Beauty and Kieffer pears did well. Spraying of trees is recommended. Many trees considered doubtful stand our winter well; among these are the black walnut, shellbark hickory, sycamore or buttonwood, catalpa, horse chestnut or buckeye, sweet chestnut. The white pine, hemlock, and spruce are not injured."

Bloomington reports "a very good strawberry crop, only the dry spell in June came just right to shorten the harvest. New beds were better than old. A good apple crop, in fact the best ever raised here. Peerless did well, the best in my orchard. The Wealthy blighted too much to be named first. The Duchess were excellent. The Itasca, Richland Beauty, Okabena were paying varieties. The Charlemof, Wealthy and a few others blighted badly."

Washburn reports "a fair fruit crop this year. Strawberries set the finest I have ever seen, but the period of drouth just at the fruiting season cut the quantity down over half. Raspberries gave about two-thirds of a crop. Plums did not give a uniform yield, some places bearing well and others none at all. From the orchards heard from the Surprise did exceedingly well, bearing the finest of plums. Severe blight is reported this season. The aphides were very destructive both on apples and plums."

The reports from this district show a marked increase in the number of fruit trees planted in the past two years. The apple growers are uniting in the belief that we must spray if we would have good fruit.

VICE-PRESIDENT'S REPORT, SIXTH CONGRESSIONAL DISTRICT.

W. L. TAYLOR, HOWARD LAKE.

The strawberry crop was good. Varieties doing well, Crescent, Bederwood, Warfield and Sample. Raspberries did well, especially Nemaha, Older and a new kind of red called Seattle. This last named variety has not winter-killed although I have not covered it for five years. It resembles the Cuthbert, but ripens latest of all. Currants and gooseberries were almost a failure on account of the currant worm.

Early Richmond and Wragg cherries fruited nicely, but the birds took all the Richmonds; the Wragg, however, ripening at the same time as the red raspberry, were not molested by the birds and carried a good crop.

DISPLAY OF FRUIT AT THE LITCHFIELD, (MEEKER COUNTY) STREET FAIR, 1903.

Of plums, the Surprise, Wolf and Freestone bore abundant crops as also the Compass cherry plum, but it blighted badly.

Grapes were about half a crop. Varieties doing well are concord, Delaware, Agawam, Moore's Early, Worden, Janesville and Beta.

The apple crop was good although there was a good deal of blight on some varieties. There was none on Peerless, Northwestern Greening, Anisim and Lyman's Prolific. The display of fruit at the Wright County Fair was the largest in the history of the county.

We visited the orchard of John Schire, three miles north of Howard, and saw five Northwestern Greening trees, which had been planted seven years, loaded with fruit. One tree had on seven bushels, and the smallest about three bushels. The Okabena trees were looking thrifty and carried a large crop of fine apples. One

thing we noticed in this orchard, the trees had been mulched until the ground was so loose that many of the trees were lying on the ground borne down under the heavy load of fruit. At the Litchfield Street Fair seventy-five varieties of apples and crab were shown. One of the significant facts in regard to this display was that while there were about thirty exhibitors of apples, all but three had planted trees grown in the county. There was a good display of apples shown at the Willmar Street Fair and thirty-three varieties had been grown in Kandiyohi County.

We were greatly surprised at the display made in Douglas County at the Alexandria Street Fair. About seventy-five varieties of apples and crabs were shown. The most numerous plates shown were of Wealthy, Duchess, Peerless, Patten's Greening, Okabena, Northwestern Greening and Wolf River.

At the different fairs visited I think there were more Okabena plates shown than of any other one kind. The farthest north noted was a Wealthy in Wadena County bearing four bushels, and a Duchess one-half mile north of Rainy Lake, on J. P. Wright's place, yielding one and one-half bushels.

VICE-PRESIDENT'S REPORT, SEVENTH CONGRESSIONAL DISTRICT.

D. T. WHEATON, MORRIS.

It is both interesting and profitable to gather facts from fruit grown for a report to this meeting, though it is not an easy matter to secure all the information wanted. Some respond promptly and some not at all; some reply briefly and some at length; one man wrote that he could write a book on the subject.

Reports from all parts of the district are encouraging and show that fruit growing is increasing from year to year. People generally are beginning to believe that fruit can be and is grown in this part of the state. There are men who have been growing apple trees for over thirty years, and some have succeeded and are raising apples and other fruits for sale. One man sold 300 bushels of apples, besides plums and small fruits.

Commercial orchards on a large scale are not to be found. Yet the amount of fruit raised amounts to a considerable sum and is increasing year by year. If there is no setback the time is surely coming when the western-central part of the state will raise all the fruit needed that grows in this part of the country—peaches being included in the list, of which one man reports raising three bushels this year.

The past year has been favorable for tree growing—almost anything that was alive grew. Blight was quite common, and some varieties were badly affected. Blight seems to be the greatest difficulty to contend with in raising apples. Some report that it is useless to try to grow grafted trees for a successful orchard—too short lived. One writes "Set out no grafted stock unless you expect them to die when they get large enough to be useful." "Out of one hundred bearing trees over half and by far the best part are seedlings." From one seedling tree fourteen years old he had fifteen bushels of apples. Out of sixty seedling trees only three have ever blighted, and they not seriously; while of grafted trees he lost over 250 by blight. He firmly believes that the principal cause of blight is root-grafting.

The apple crop was good generally—for some orchards it was the off year. The three leading varieties are the Duchess, Wealthy and Hibernal. More trees of these varieties have been set out, and they are the oldest trees. Patten's Greening shows up well, is a good tree, hardy, free from blight and prolific. The Longfield is worthy of a place on account of being an early and constant bearer. The Peerless is holding for the promises of its introducer—no blight and hardy so far, thrifty but tardy coming into bearing, but that may be all for the best. Many other varieties are doing well.

The plum crop was light generally. Raspberries a good crop. Gooseberries light yield. Currants not very good. Strawberries were fine and a good showing for the coming year. Grapes: Delaware ripened, others not half ripened.

Fruit list recommended:

Apples.—Duchess, Wealthy, Hibernal, Patten's Greening, Longfield and Peerless; Malinda and University for trial.

Crabs.—Florence, Whitney No. 20, Early Strawberry, Minnesota and Shield's.

Plums.—De Soto, Forest Garden, Wolff and Rollingstone.
For Cherries.—Including the Compass, leave them alone.
Currants.—Red Dutch and White Grape.
Raspberries.—Turner and Loudon.
Black Caps.—Older and Kansas.
Blackberries and Dewberries.—Do not try them.
Grapes.—Worden, Delaware and Janesville.
Gooseberries.—Houghton.
Strawberries.—Bederwood, Senator Dunlap.

VICE-PRESIDENT'S REPORT, EIGHTH CONGRESSIONAL DISTRICT.

A. F. GASTFIELD, DULUTH.

The spring of 1903 opened fair and warm, with showers and sunshine in alternation, promoting growth of trees and plants better than we had seen for years.

In the beginning of June the prospect for a fruit crop was very promising. All went well till the tenth of the month. When the writer woke on the morning of the eleventh, he found ice in a tub standing at the well that measured fully an eighth of an inch in thickness. The effect on trees and bushes of such a freeze at such a time can easily be imagined.

Even our hardy native evergreens, such as balsam and black spruce, on which the new growth was from an inch to an inch and a half in length, killed back, the first growth hanging dead and brown all summer, at the side of a second new growth.

All apple trees were through with their blossoming and considerable fruit set, which turned brown and dropped off the trees after the frost.

Plums produced a light crop, and were badly aflicted with "pocket."

The Compass cherry bore for the first time, but were somewhat late to get ripe. The same with the sand cherry.

Strawberries suffered much from the frost and were hardly more than a quarter of a crop.

Red and yellow raspberries produced a good crop, while the black cap and purple varieties were injured by the winter.

Our soil here around Duluth consists mainly of a red sandy loam. In laying down raspberry and blackberry canes for winter protection, the ground must first be mulched and the canes covered with straw or similar materials, and not with soil as recommended for other localities. Contact with the soil invariably kills the canes.

Blackberries yielded about half a crop. Many of the buds were nipped by the frost. Dewberries almost a failure.

Red and white currants bore a nice crop in the centers of the bushes. All on the outside and top were killed when half grown. The black failed to set much fruit.

Gooseberries produced but few berries.

In summing up the result of 1903 I note that we met with many failures. But there is one thing that turned out better than we expected: Trees and bushes have ripened up their wood well in spite of the excessive rain and cold weather that were so persistent the latter part of summer and early fall. So we have hope for something better to come.

THE PLEASURES OF GARDENING.

MISS MARTHA SCOTT ANDERSON, MINNEAPOLIS.

One always tries to escape a feeling of inferiority and struggles still more to avoid an exhibition of it. As I can have no hope of securing recognition for the results of my gardening—and indeed all such idea is and has been foreign to my mind—I can only meet you on a footing of equality through my interest in and enjoyment of gardening.

The pleasure in gardening is shared by all who take an intelligent interest in the subject, but it is made up of somewhat differing elements in the gardener with whom it is a profession and the amateur with whom it is an avocation. To the latter there is no thought of gain, and his pleasure is measured in very small degree by his success. Every gardener takes pride in having something worth while to show for his labors, but the most interesting phase of gardening to my mind is the experimenting, and the lamentable failures afford just as much information and are as absorbingly interesting as the successes.

Without doubt the most practical of you have fallen in some measure under the spell of the seed catalogue with its rosy and elusive promises. A strictly truthful chronicle of my principle of gardening is to provide enough easily managed and reliable flowers and vegetables to keep up a fairly presentable appearance in the garden, and to supply the table and house, and then to let my investigating spirit run riot in trying about every new thing under the sun: that is, things new to me. In this way I am steadily acquiring at least a casual acquaintance with the entire florists' list of garden flowers as well as with many new and strange vegetables. Without so great a liking for trying things for myself I should have been obliged to maintain a sort of an experimental station if I wanted this kind of knowledge, for neither descriptions nor illustrations serve altogether to familiarize one with the exact appearance of plants. One of the common results of these floral experiences is to find hidden under some high sounding name a plant familiar from childhood.

One might have hesitated to present gardening merely as a means of affording pleasure were it not for the distinguished support of writers ancient and modern who have dwelt upon its delights, and of semi-serious books few recent ones have had more appreciative audiences of a very respectable size and the highest intelligence than "Elizabeth of the German Garden," the Commuter's Wife, she of the Hardy Garden and the Journeyer to Nature.

The charm of these books is the spirit of sympathy for nature and the reflections colored by this spirit. The non-literary gardener shares these pleasant reflections although he may lack power of expressing them strikingly, and they make up a very important part of his pleasure.

Charles Dudley Warner regarded his garden chiefly in the light of a delightful illustration of morals. He said:

"The principal value of a private garden is not to give to the possessor fruit and vegetables (that can be done better and cheaper by the market gardeners) but to teach him patience and philosophy and the higher virtues, hope deferred and expectations blighted, leading directly to resignation and sometimes to alienation. The garden thus becomes a test of character, as it was in the beginning."

The literary gardeners mentioned gardened in part by proxy and while that undoubtedly increased the opportunity for enjoying the results it deprived them in part of the joys of gardening per se. It is of gardening for its own sake, the emotions created and fostered by the study of the subject, the planning, the wholesome contact with the soil and the watching and tending of the plants that I am speaking.

No one needs the pleasures and other benefits conferred by gardening more than the city dweller, and the need grows with the crowding and the confining character of one's occupation. Sir Thomas Lipton has put the case well, saying: "Gardening gives you just enough to think about to be a distraction, yet not enough to worry you."

A very small space is sufficient to furnish this valuable mental and physical relaxation, and even a window box is not to be despised for its mental healing to a mind borne down with cares, but one likes fair scope for one's energies, and nearly every one who acquires a taste for gardening and discovers its possibilities is filled with a desire for a garden that will supply his table with fresh vegetables and keep his house abloom from May to November.

The one practical clause of my remarks will be on this point. From my experiments I can assure any one interested who has not tried it for himself that this desire can be fulfilled in ample measure in the backyard of an ordinary city lot in the hours which one ordinarily spends in idling about the veranda to no particular purpose.

To plant the desire for making something grow is to set in motion a process of which the planter often has no conception. It will never be shown in the statistics how many boys who have gardened enthusiastically under the direction of the Minneapolis Improvement League with seeds furnished by the league have had their at-

tention turned to agricultural pursuits and have been inspired to find their places in the more healthful life of the country instead of aggravating further crowded city conditions. Neither will the results of various influences that induce dwellers in crowded flats to cultivate boxes or plant the poor courtyard be known or measured, but in not a few cases they have suggested the thought of the freedom of suburban surroundings, where one could do real gardening. In this way indirectly the humble gardening attempts have been instrumental in home-making, with its important results in character building for the whole family.

MINNESOTA FRUIT EXHIBIT AT THE ST. LOUIS EXPOSITION.

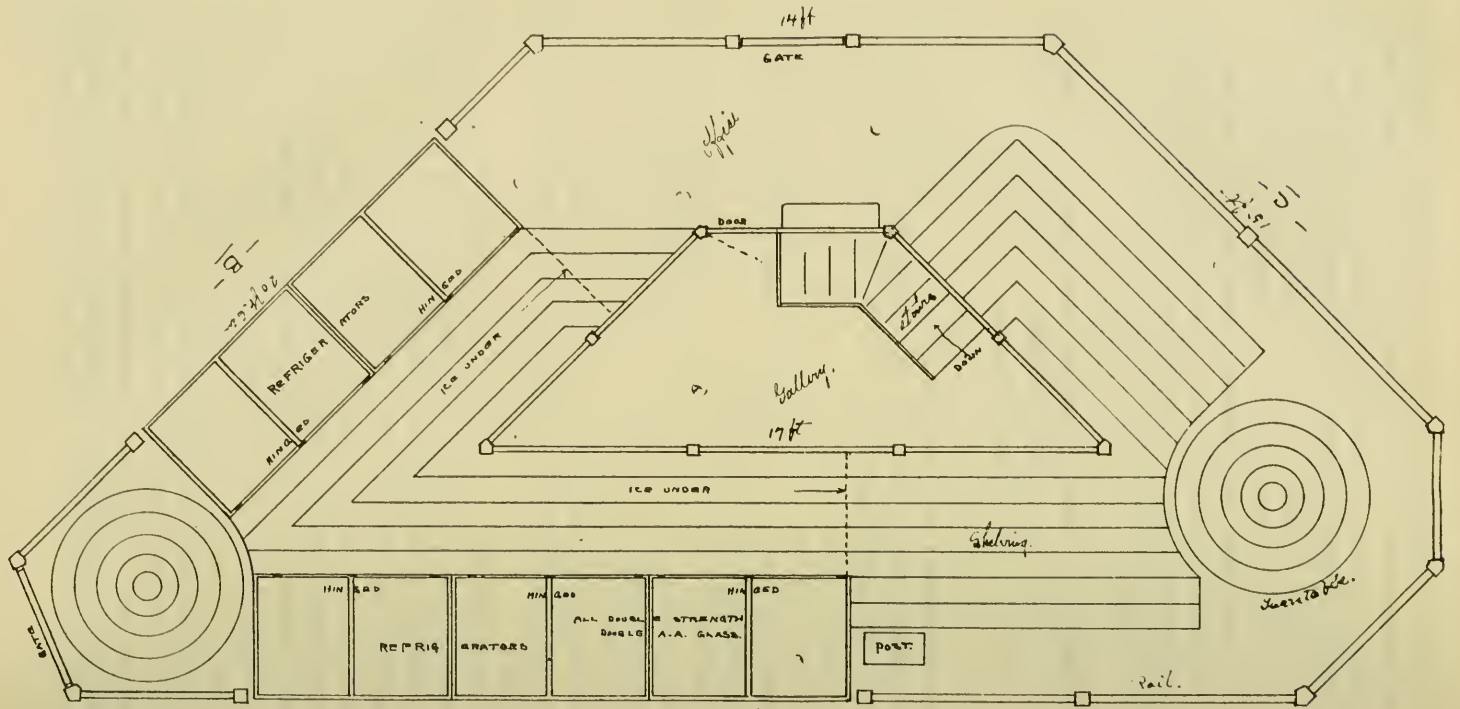
(Read at the Annual Meeting, Dec. 4, 1903.)

A. W. LATHAM, SUPT.

At the request of the commission having in charge the exhibit from this state to the exposition to be held at St. Louis next year, the writer with considerable reluctance has undertaken to look after the exhibit of fruit to be made there at that time from Minnesota. The matter was canvassed and this decision arrived at as early as May of this year (1903) and immediately steps were taken to carry this conclusion into effect.

In considering the situation it has been thought that an exhibit something about the same dimensions as the one made at Chicago ten years ago would be satisfactory, and while no definite conclusions have yet been reached it is the present intention to prepare an installation somewhat similar to the one used there and that will require approximately the same amount of fruit to carry it through the season.

The work that has already been done in connection with the exhibit comprises the purchase of something over 200 glass jars, of various sizes, made especially for exhibiting fruit, and the filling of these jars with an assortment of Minnesota fruits. Something like forty small jars were filled with strawberries. The fruit for this purpose, as you know, was secured at the last summer meeting of the society, the best fruits shown at that time being taken. A few jars of other small fruits were secured, and also something like twenty jars of plums, thirty jars of grapes, 100 jars of apples and a few of peaches and pears, the exact figures not being conveniently obtainable. Some of these jars are quite large and contain an assortment of fruit. The apples were mainly secured at the time of the state fair, being selected from the plates of fruit on exhibition at that time. It has been the purpose to secure as far as possible



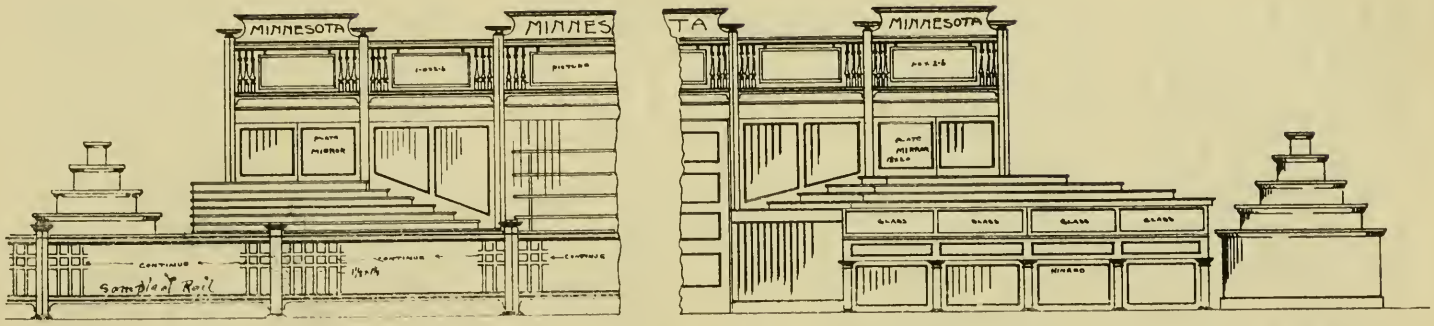
Ground plan of structure to be erected at St. Louis Exposition on which to exhibit Minnesota Fruit.
N. B.—Since writing the accompanying article plans as shown have been prepared and accepted by the exposition management.

the names of the growers of this fruit, keeping a record of them and also attaching to the jars themselves the name of the grower, but from the way in which considerable of this fruit was taken at the summer meeting and the state fair I fear that it has not been found altogether practicable to do this. Such a record, however, has been kept as far as possible, and a list of the names of the contributors and the fruit contributed will appear in the final report of the superintendent. Grapes were most too unripe to be taken from those exhibited at the state fair, but some very good specimens have been secured since.

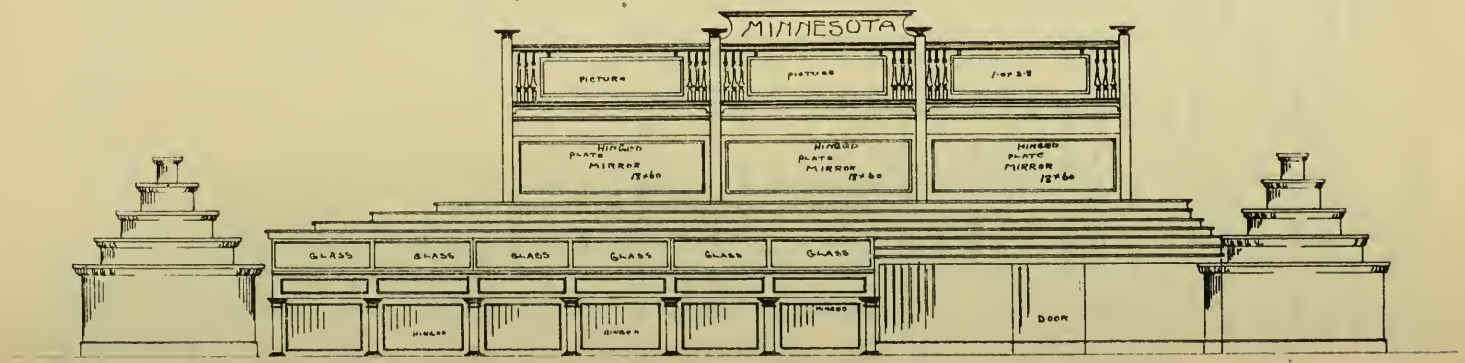
All this fruit has been put up by Mr. Harold Cuzner, at the State Experiment Station, under the supervision of Prof. S. B. Green. Up to the present time it is looking well, and we believe the various processes that have been used, adapted to these various fruits, will enable us to put up a fine display of this character.

Quite a quantity of apples have also been secured and placed in cold storage for use during the spring and summer months, from the opening of the exposition until fresh apples can be had in August. One hundred twenty-five bushels in all have been stored, more than twice what was saved for the Columbian Exposition. These include all the leading varieties of apples grown in our state. A full list of this fruit and of those from whom it was secured will also be published. The management at this time are especially desirous to secure a farther quantity of late keeping apples, it being considered a question as to whether the Wealthy apples now in storage are going to keep in good condition until they are needed, appearances at this time being somewhat against it. Any of the members having apples in good condition that are suitable for this purpose would confer a favor by speaking to the writer in regard to it.

A desirable space for the Minnesota exhibit has been secured near the northeast corner of Horticultural Hall and facing in part the observatory, which lies to the east of Horticultural Hall and between it and the intramural railway. The outline is irregular, it being forty feet on the front and all kinds of shapes in the rear; its greatest depth, however, is eighteen feet. The present plan is to erect on this a structure somewhat similar to the one now standing in Horticultural Hall at the state fair and with a gallery above for the benefit of visitors. There will also be a space in the rear of the exhibit—which is as much of a front as the so-called front, as the space has wide aisles on all sides of it—which will be a sort of open office on the level of the floor. This will be suitably railed off and provided with some convenient seats, probably a set of the reports of the society and other equipments, as seems advisable. Part of the



Rear views of structure to be used in displaying Minnesota fruit at St. Louis Exposition.



Front view of structure to be used in displaying Minnesota fruit at St. Louis Exposition.

plan, if it is found it can be carried out to advantage, provides for a Minnesota Wealthy tree to be placed above the exhibit and about in the center of the space. The intention is to make this the prominent feature of this exhibit. The preparation and installation of this tree is to be made by the Jewell Nursery Co., and as they have been so successful in getting up very attractive fruit exhibits at the state fair we believe their experience will warrant an assurance that this will be equally so. The plans for the structure to be put on this space are not yet prepared, as the outline for the space has just come to hand, but these plans will be worked out soon and the work of structure will be done here in Minnesota during the winter and the structure erected in Horticultural Hall at St. Louis in time so that Minnesota may be fully ready for the opening of the fair on April 30.

The exhibit during the summer months includes a full line of small fruits in their season, and in the fall months every variety of plums, apples and grapes and other fruits. It is the purpose to make an exhibit of which every member of the horticultural society and every citizen of the state of Minnesota may feel proud and to do this it will require the co-operation of every fruit grower in the state. The superintendent will need to know where good fruit is to be had and will depend upon the membership of this society to give him information on this subject, and during the months when fall fruits are ready for exhibition we desire that every member of the society should have the opportunity to contribute at least one box, of a bushel or more, of their finest fruits towards making this exhibit a success. At the Chicago exposition a large number of our members took advantage of this opportunity. This, members of the horticultural society is your exhibit! The fact that the superintendent is also the secretary of this society and by reason of that has ready access to its membership had much to do with the appointment, and the superintendent must continually look to you for that support without which this exhibit cannot be made a success, and feels confidentially assured it will be most heartily given. We expect during the progress of the fair to have monthly reports from those in charge and, as the fair progresses, have them published with regularity in the Horticulturist. This will keep the members well in touch with what is being done. As opportunity offers please let us know what you can and are willing to do to help along this exhibit.

THE BLACKBERRY PATCH.

NILS ANDERSON, LAKE CITY.

The blackberry is the most neglected of all the small fruits on account that it is mostly planted on soil that is too dry. I once saw a patch planted on the south side of a grove, and where the wind and sun had a clear sweep, and there was but little show for berries. I once visited a good sized patch planted on gravelly soil. It was well cultivated and kept clean, but the berries never came to maturity.

The blackberry is not a berry that will do well under high cultivation, as the roots run but little below the surface of the ground and the feeders get plant food from all parts of the patch, which is a good reason why the soil between the rows should not be cultivated. It will do its best on loamy, moist and cold soil. Its nature is to grow in the woods where there are plenty of leaves and dead twigs, that keep the ground moist and cold. To supplement this and to follow nature as much as possible, I leave the old canes in the patch, after cutting out the rows, and then cover them with straw. It also makes a nice clean mat to walk on while picking.

A blackberry patch is as easily taken care of as a strawberry patch and after once being planted it is good for years to come.

I have tried winter protection in various ways, but there were more lost in five years by bending the canes down than there was in losing two crops out of five and letting the canes stand.

The blackberry is a very good berry in its season. There is no berry that I like to go out and eat fresh from the patch as I do the blackberry. It has a cold, refreshing acid, that no other berry can compare with in the hot and scorching month of August. I think if grown to any extent there would be call for a large quantity.

I have a patch of six rows seven rods long that produced 527 quarts of berries, and the berries from that patch were all sold at 12½ cents a quart. I have one row that yielded even more, but the berries were not disposed of; my blackberries were spoken for and booked long before ripening.

You may say the blackberry is not a sure crop; neither is the strawberry. The blossoms of the blackberry are so late that they are never hurt by late frost, and when the vines bloom full I can rely on a crop of berries. My berry customers will always inquire about the blackberries as soon as the strawberries begin to grow scarce. A good crop of blackberries is a great addition to the berry season, and many are they that are sad when they hear that "This is the last of the berries."

Mr. Geo. J. Kellogg (Wis.): What varieties have you?

Mr. Anderson: The Ancient Briton.

Mr. J. W. Murray: Did you say that the Ancient Briton would stand your latitude without protection?

Mr. Anderson: Yes, sir.

Mr. Murray: Do you get a crop every year?

Mr. Anderson: I get three crops out of five years.

Mr. Murray: This is as well as anybody does. In putting mine down I always lost as many as I saved.

Prof. Robertson: Are they in the shade of trees?

Mr. Anderson: Some of them are, and they do as well as those that are not.

Mr. R. A. Wright: If he were living around Lake Minnetonka and trying to raise Ancient Briton, instead of getting three crops in five years I don't think he would get one. I never got a crop of Ancient Briton blackberries by leaving them up all winter. However his place is a good deal further south than we are. If any one started further north than this I would advise him to leave them alone.

Mr. Brackett: I never succeeded in this latitude without winter protection.

The President: We lost nearly all of ours last winter, and they were well covered. (Laughter.)

Mr. S. D. Richardson: We had the biggest crop we ever had, and they were never covered. (Renewed laughter.)

The President: I trust the farm students are getting a great deal of valuable information out of this. (Great laughter.)

Mr. A. D. Barnes (Wis.): In central Wisconsin the native home of the Ancient Briton blackberry, we have been wonderfully successful in growing them, and, as a rule, we cover them. If we could be guaranteed three feet of snow I do not think we would cover our blackberry vines at all. We always bend them at the root and cover with earth.

The Secretary: I have been at Mr. Anderson's place, and I think that his soil and location has a great deal to do with it. He is very successful in growing blackberries on his farm, and also some plums which it would be of very little use to plant in the average location. He is right on top of the bluff at Lake City. I think his location is about three hundred feet above the lake. He has an ideal site for fruit growing. His soil is a black loam, not too rich, with a good clay under it and plenty of lime in it. It is high in the air and at the edge of the bluff, so that the air drainage is perfect. Under those circumstances and conditions he can raise fruit that would be tender in another location.

Mr. Gardner: What was the cause of the loss of two crops in five years?

Mr. Anderson: Freezing.

Mr. Gardner: Winter-killing?

Mr. Anderson: Yes, sir.

Mr. Murray: My observation is that what blackberries we do not cover in this region are not worth growing.

Mr. Richardson: Sometimes blackberry plants will live if growing up with trees. I have had them come up in the nursery rows, and they came through perfectly. They were volunteer plants.

Mr. Anderson: I think by covering with straw the canes would live through the winter if they were not mulched too heavily.

Mr. Studley: I want to add my testimony to that of the worthy secretary. I believe location has a great deal to do with it. I have raised blackberries for a good many years. I have covered very little, but my location is a very good one. I have a neighbor who thought if I would not cover he would not. He went into the blackberry business, and in three years he lost all his berries. He had a different location. His location was very much exposed while mine was sheltered.

Mr. Elliot: In covering with straw has any one had them girdled by mice?

Mr. Wright: Mr. Anderson used straw, but he only used it as a mulch and probably the mice did not bother him. I covered my blackberries one year with hay mulch, and where the plants were a little close together the mice girdled them completely, and I lost nearly the entire patch. They were laid down with dirt and covered with hay.

Mr. Anderson: I do not put the straw on my blackberries until nearly spring. If I did I should have them girdled. There is more or less grain in the straw, and that is what the mice are after.

Mr. Elliot: I want to call attention to a very simple remedy. It is simply a little corn meal with a few grains of strychnine mixed with it, put into a can and incline it about this way (indicating) just so the mice can get into it. That is a perfect protection.

REPORT OF SEEDLING COMMITTEE, 1903.

WYMAN ELLIOT, CHAIRMAN.

By a pre-arrangement, on August 14th, Prof. S. B. Green, J. M. Underwood and I visited Mr. T. E. Perkins' seedling orchard at his home in Red Wing. The weather was threatening, but as we had made an appointment with Mr. Perkins to meet us at the train we did not like to disappoint him or each other, so we braved the storm, although it was not very pleasant viewing apple trees in a pouring rainstorm. Many of the trees were full of fine sized fruit, some bearing such quantities that props had to be used to keep the trees from breaking down. The trees had made a good growth, and the foliage on most of them was healthy, showing some slight effects of rust. Some of the earlier kinds were coloring up finely. while others were very green, indicating late varieties. We made a very hurried examination in a pouring shower of rain, only passing by a few of the most prominent trees. We found it so disagreeable wading through wet clover we decided to postpone further inspection and come again at a more propitious time. So we hurried back to Red Wing, and at the earnest solicitation of Mr. Underwood we visited the Jewell Co. Nurseries. As the rain had ceased we were taken for a drive through the grounds, which gave us some small

idea of how extensive these plantations were. Of course I cannot give a detailed description of what we saw, but, be assured, we found the orchard grounds in a fine state of cultivation and the trees well loaded with good sized fruit. One variety in particular, the Okabena, was very heavily loaded, I thought equaling the Duchess for productiveness. One particular block of one year old trees, grafted on seedling roots of the previous year's planting, had made an exceedingly fine growth, some of the trees being five to six feet high. Taking the evening train we arrived home at 11 o'clock,

T. E. PERKINS IN HIS SEEDLING ORCHARD.

feeling that the day, though a wet one, had been full of pleasant experiences and instruction.

Trip number two was taken in company with Pres. Wedge and Prof. Green to visit the home and nurseries of C. G. Patten and Sons, at Charles City, Iowa. Mr. Patten met us, and we had a pleasant drive through some of the principal streets, which were lined on either side with large specimens of soft maple, white elm, gray and white ash, a few hackberry and here and there a horse chestnut. The yards and lawns were planted with various kinds of evergreens and ornamental shrubbery, vines and flowers. The streets were regular, broad and well kept, showing thrift and up-to-date ideas for a country town. On arrival at Mr. Patten's home

we found it surrounded by magnificent specimens of evergreen (white, Austrian and Scotch pines and Norway spruce) interspersed with deciduous trees, with orchard and nursery in the immediate vicinity, showing what energy and push guided by a resourceful mind had accomplished in one short lifetime. We made several trips through the orchard and experimental grounds, noting the many different seedlings of Mr. Patten's origination. The prominent one, most claiming my attention, was the original tree of Patten's Greening, showing a strong, healthy, vigorous growth and foliage, fairly well loaded with fruit—a remarkable tree. Very prominent, largely owing to the abundance of wet weather, was rust on leaves and fruit of most of the named varieties, with here and there an exception. We saw Iowa Beauty sparsely loaded with good sized, attractive fruit, foliage showing some effect of rust; Brilliant, well loaded with fruit, foliage quite healthy; Patten's Fameuse very fruitful and promising; and several hundred other seedlings, none of which, to my mind, equals the varieties already mentioned. One very prominent feature of this station was the luxuriant growth of weeds and grass. Were I to criticize Mr. Patten's method in the growing of seedlings, I should say his trees were overcrowded for best development of tree and fruit, but where so many trees are on trial it is excusable, and he ought to be highly commended for the grand work he has done for the advancement of the fruit industry of Iowa and the northwestern states. We visited the Sherman Nurseries, just outside of the city, and were much pleased with the many object lessons of interest in the growing of nursery stock. The one thing of most interest to me was five acres of ground under artificial shade for the purpose of growing evergreen seedlings. Here we saw long beds three to four feet wide, full of one, two and three year old seedlings, growing with all the luxuriance of their native habitat. We were shown a fine field of Hungarian grass, where in early spring twenty bushels of apple seed had been planted, which proved a total failure on account of a superabundance of wet weather at the time the young seedlings appeared above the surface of the ground, causing them to damp off, or blight. There were many things seen of great interest to me, an old nurseryman, showing the marked advancement in the present methods of conducting the nursery business.

Perhaps all do not know how persistent and pursuasive our President Wedge is when he wishes to accomplish anything. Prof. Green and I had intended to come directly home from Charles City, but our president pleaded and insisted that we visit the Wedge nurseries and partake of his genial hospitality, and of course we

yielded. We saw a fine collection of transplanted evergreens put out in regular beds with exact precision and cultivated with utmost care and showing fine growth. One of the suggestive object lessons seen here was the top-grafting of a Hibernal apple tree with scions of the Milwaukee. This tree was loaded with fruit, but on account of grafting the limbs three or four feet from the main trunk of the tree the branches were bending to the ground, showing conclusively this was not the best method of top-grafting. I would advise in all top-grafting of old trees the cutting back to within twelve or eighteen inches of the main limbs or bodies and pruning back part of the first and second year's growth, thereby making the limbs more stocky and better able to carry the fruit in an upright position. Although we were there only a few hours, the many things seen amply paid for the trip, and we felt the time had been well spent. Leaving Albert Lea on the morning train for home, I parted with Prof. Green at Waterville to visit my old friend Seth H. Kenney, at Morristown. Here I saw a fine orchard largely Wealthy and Duchess with a few Patten's Greening and other varieties. All had been or were carrying a full crop of fine fruit, estimated at 800 bushels. Many of the Wealthy were overloaded, a thing to be guarded against in fruiting trees of this variety. The fruit on these trees had not been properly thinned to give the largest amount of fine commercial fruit. I think nine-tenths of our fruit growers do not give the much needed attention they should to the thinning of the fruit on very productive trees. A tree overloaded with small, immature fruit is very much overtaxed by the drain on its vital strength in maturing skin, core and seeds; the pulp of large or well developed fruit does not affect the vitality nearly as much. I examined Mr. Kenney's method of top or limb grafting with considerable interest: that done by grafting Malinda scions in the tops of Wealthy and Duchess I can most heartily recommend, as these trees were full of fine specimens of fruit. The scions of Missing Link apple grafted on the ends of drooping limbs of large trees had made but little growth, but two years after grafting nearly all had developed fruit buds and were bearing a few small apples. The grafting on drooping limbs has a tendency to the early production of fruit buds and with tardy bearing kinds may be a very good method, but for best results I think grafting in the tops and main branches of trees will be of the most value. The Malinda top-worked on the Duchess produced fine large specimens of fruit. This I think due to the early ripening of the Duchess, which having been gathered gave the full vigor of the tree to the later maturing variety. Here may be an idea worthy of further investigation. I was shown several new

seedling apples, but none of them possessing enough of merit for propagation.

After returning from the American Pomological Society meeting somewhat elated with the success of our exhibition of commercial varieties and seedling apples, wishing to learn more of the behavior of the Perkins' seedlings during the six weeks since my first visit, on Sept. 30th I made a second trip. I found all the early fall and many of the later kinds had been gathered. A few of the latest ripening varieties were still on the trees. No. 32 had at least one barrel of good sized, finely colored fruit showing good staying qual-

VIEW IN T. E. PERKINS' SEEDLING ORCHARD, RED WING.

ities, as very few had blown off. No. 1 A—Large, oblong, red, slightly russet, mediumly productive, flesh tinged with red, quite acid, hard, firm flesh, indicating a long keeper; fruit holds well to the tree; bark smooth, spreading habit, limbs well shouldered, free from blight. No. 7 A—Very productive, of commercial size, conical shape, yellow ground, bright red cheek, holds well to the tree, attractive, rather open core, twelve seeds, quite acid, in season good eating, judged to be a late keeper, tree some inclined to blight in twig and limbs, think it will be short lived. No. 20 A—Fine tree, spreading habit, strong and vigorous, eleven main branches, leaves thick, good size, no blight, fruit holds well to tree, large oblong shape,

Malinda type in form, color green ground striped with red, flesh coarse, sub-acid, core large, seeds not counted, productive, one of the best late kinds. I could give descriptions of other trees, as I have made some notes for my own use, but the above are sufficient to indicate there are some of these seedlings which will be valuable additions to our already extensive list of seedling apples. I have gathered leaves from several of the trees showing types of foliage resembling that from trees on each side of their parentage.

The more I examine and study the exterior appearance of this lot of seedling trees and their foliage, the greater is the mystery of how it happened that so many of them produce such fine fruit, representing all the seasons in ripening and keeping qualities. Here we have the Malinda on the mother side, of which, no doubt, from the appearance of the foliage, growth of tree and the fruit, a few were self-fertilized, and in very many of the others the blossoms from which they sprung were crossed with pollen from the five varieties, Duchess, Perry Russet, Haas, Wealthy and Tetofsky, surrounding the parent tree. This is very plainly indicated by the shape, size, color and quality of the fruit produced. These facts, so well illustrated in Mr. Perkin's seedling orchard, will, I hope, give us all food for thought and investigation which will lead us to accomplish what we have so many years striven for, the origination of the ideal hardy, productive, long keeping, highly colored, good quality apple and adapted to the use of commercial orcharding for this great northwest.

I must not close without calling your attention to the fact that the Central Experiment Station has grown some valuable seedling apples and plums, thirty-five kinds of which were placed on exhibition at the last state fair, attracting considerable attention from their size and quality. From this list of seedlings nine varieties were selected to be shown at the American Pomological Meeting in Boston. They were a valuable addition to our general collection of seedlings and named varieties of apples. We most heartily commend the efforts of Prof. Green in the planting of apple, plum and other fruit seeds, to develop valuable varieties adapted to our climatic conditions.

Mention should also be made of a small collection of seedlings put on exhibition at the state fair from the Owatonna Experiment Station, which showed some varieties being grown there that may prove of value as additions to our list of seedling apples. Of the great numbers of seedling apples and plums exhibited the past season there are a few having several points of merit which will be

more fully described in the report on seedlings exhibited at this meeting.

The Chairman (Saml. B. Green): I wish to add a word for myself. I think Mr. Patten has been doing a very remarkable work in the way of originating new apples. He is a pioneer in this work, and I can hardly see how we can give him the credit that really is due him for his foresight in undertaking this work, for which he has received nowhere sufficient money consideration. Money cannot pay for that into which he has put his whole life, and his place was of great interest to me as it was to Mr. Elliot. This summer we could not see things in as good shape as in other years, because there was not so much fruit, but the place was in good shape. I am ready to answer any question that may be asked concerning this report.

Mr. Yahnke: Was top-working on the limbs any recommendation of the way it would grow?

The Chairman: Mr. Kenney has been doing that. He has become interested in the Missing Link apple, and he has been working the two ends of a bearing tree. He has quite a little fruit to show down stairs. I do not think he would recommend it for general practice, but I think the idea is a good one in getting something into bearing quickly.

Mr. Barnes (Wis.): I noticed that mention was made of the number of seeds in one particular apple. I would like to know whether it is a benefit or a detriment for an apple to produce a large number of seeds.

The Chairman: I guess we will let Prof. Hansen answer that question.

Prof. Hansen: I believe a large number of seeds in any apple as a general thing indicates that it is near the primitive type of the apple. That is the theory generally held by those who have worked over them the most, but on the other hand there are some old apples that have a good many seeds in them. As a rule, however, an old apple has generally few seeds. I have an apple in my collection that has absolutely no seeds, one that I picked up while in the east. Aside from that it has no other valuable point about it. The fewer the seeds in an apple the better, and the seedier the apple the nearer it is to the primitive type of the apple. That is the general state of opinion on the subject.

Capt. A. H. Reed: I have been studying this seed question a year or two, and every apple I have examined, no matter what the variety, it has five seed cavities and as a general thing two seeds in each cavity. I never examined an apple yet that had over ten seeds. It has ten if the apple is fully developed, no more or less.

Prof. Hansen: How many apples have you examined?

Capt. Reed: Hundreds of them.

The Chairman: I remember when I was a boy I used to go to parties, an we used to take the seeds out of the apples and say. "One I love, two I love, three I love, I say; four I love with all my heart, five I cast away," etc., and we used to think then there were a different number of seeds in an apple.

Mr. P. Clausen: I visited one of my friends at home before I came up here, and we were looking over some apples. He showed me an apple which was a small Danish apple, and called my attention to the fact that the apple was full of seeds. I do not remember the exact number, but it was fifteen or sixteen seeds he took out of a very small apple.

Prof. Hansen: Talking about apple seeds, I have been working on that for years and have examined hundreds of varieties. Some varieties contained as many as nineteen seeds, and some contained only three or four. There is a great variation. I think it depends somewhat upon the season or how well the fertilizing is done. I think after a time we shall be able to construct a table giving the average number of seeds for each variety.

Capt. Reed: Don't you find but five cavities?

Prof. Hansen: There are some European varieties that contain only three or four. Five cavities is the standard number. All our common apples have only five.

Mr. Barnes: I am glad to hear this discussion. I understand from the paper that has just been read that the number of seeds is twelve. I am greatly interested in this matter, because I am trying to propagate apples containing as few seeds as possible. It is the maturing of the seeds that dwarfs the apple, and if we could produce an apple with only two seeds instead of twelve to fifteen it would be larger.

Mr. Probstfield: While this question in regard to the number of seeds in an apple is up for consideration I will state that ten or eleven years ago I became an apple "crank." I acquired the habit when I ate an apple of taking out the seeds and planting them. The best apples we have are "sport" apples, and you will find in them as many as nineteen seeds. I hate to contradict Capt. Reed, but I have found as many as nineteen seeds in an apple, and frequently as many as fifteen or sixteen. I got some seed from Mr. Sias fourteen or sixteen years ago. He told me it was Hyslop seed. The crabs grown from this seed commenced to fruit within the last three years, and they have invariably twelve or more seeds. One is as large as the Transcendent and is fully as good, only later, and it fully answers the purpose for domestic use. The smaller apples are better, but are full of seeds. I have only five seedlings, and the last one is not good to eat; it is good for nothing, but it is the finest looking of the five. I have examined all those apples, and I know they have more seeds than the gentleman stated.

Mr. Yahnke: In regard to seeds, I have particularly noticed in the last few years in a variety of seedlings that there are from five up to seventeen seeds, and I always found that the best specimens contained the fewest seeds.

The Chairman: I think there is no better authority on this subject than Mr. C. G. Patten.

Mr. Patten: I was just going to remark that I do not know that this subject is of much importance. In reply to what was said by Prof. Hansen that a large number of seeds indicated a primitive form of the apple, I think that statement should be modified, perhaps. In my observations and in cross-fertilizing I found many of the

hybrids with few seeds. One of the best hybrids I have ever seen was taken from where the earlier seedling crabs originated in this state, down at Hesper, and that had only three or four or, possibly, five seeds. A cross between the Soulard and the common apple had but from one to three seeds, rarely five. I have examined many specimens. The finest barrel of Yellow Bellflower I ever saw grown on Brown Lake Prairie, in Wisconsin, from which I got the seeds and planted them, had from fifteen to seventeen seeds to the apple, and, of course, we could not say that that apple went back to the typical form. It is not the number of seeds an apple contains that makes it better or worse, for that barrel was of as fine a quality as I ever ate and contained as fine specimens as I ever saw.

Mr. Radebaugh: This is one of my pet theories of active fertilization, and I will give you my experience, and others may notice it hereafter, that people who have bees in their orchards usually make a success of raising a crop of fruit every year. Mr. Howard, who has his apples on exhibition, I noticed had six plates on which he took first premium right along since he started in in that condition. He has a lot of bees on the south side of his orchard, and I have noticed in different places in the state where they have bees they have good fruit, and my theory is that the little bees help to fertilize those apples, and the result is that the pollen is more evenly distributed, and as they are fertilized they have more seed. I think an apple well supplied with seeds is a strong apple and is more capable of sustaining itself and will hold on to the tree better because it is simply more highly developed. I have taken an apple—and you can do the same—and where it was defective on one side I have cut it crosswise, and I have discovered where I think the defect is. On that side there were less seeds, and that was because the apple was poorly developed on that side.

Mr. Barnes (Wis.): Just one word more. I see you are all interested in working out the seedling problem. I wish, Mr. Chairman, you or any one else in this audience would make it a point to visit our section. I believe we possess more valuable seedling apples than any other section, and most of them are chance seedlings and not planted with the idea of raising good apple trees. I think I can offer you some encouragement in this matter. I discovered one seedling tree in the edge of a patch of timber that bore apples this past season, some of which had no seeds whatever, and I am endeavoring to keep them for our meeting at Madison. It is a large fall apple. The largest apples had no seeds, but the smaller apples contained some seeds.

The Chairman: Waupaca can make a very nice showing of apples.

Mr. Barnes: If any one would like to make a trial with that apple I will send them scions. I do not own the tree, but I control the scions.

Mr. Mitchell (Iowa): Perhaps my observations may be of a little value. I had the opportunity to collect all the seed from five to fifteen bushels of Russian apples for planting. I cut and dug the seed out of about ten bushels. I did not find the largest number mentioned here, but I found as high as fifteen in one apple. I found

the larger apples had the fewer seeds, and the smaller the apple the greater the number of seeds. I have also noticed in other fruits that the larger specimens had the least seeds. If the apple goes to seed it takes that extra nutriment to form the seed, and it therefore does not form so much pulp, and if the seed takes the vitality from the tree it is more injurious to the growth of the tree than the fruit, and the larger number of seeds there are in an apple the smaller the apple will be.

The Chairman: In our Tokay grapes the small ones are those which have no seed in them. The same is true of the Malaga grapes, the small ones have no seed. Possibly in one case it may be due to the entire lack of fertilization.

Mr. Geo. J. Kellogg: The older the apple the fewer the seeds. Such varieties as Rhode Island Greening and the Baldwin are very shy of seed.

The Chairman: Yet the Duchess produces lots of seed.

Mr. Barnes: About this seedling I referred to as growing in the woods, there is not another tree within sixty rods of it, yet some of the largest specimens have no seed.

Mr. Yahnke: I would like to explain my theory in regard to that to Mr. Barnes. The tree grows in the woods and is not exposed to the bees and the insects, and, as he says, a good many of the largest apples have few seeds in them. Those apples that have few seeds will ripen earlier than those that have a good many seeds, but they will not keep so well.

The Chairman: An apple blossom may be fertilized on one side and the other side may not be affected by the pollen, and if it is not fully fertilized it will not be full of seed. Some orchards are sterile without bees.

THE TULIP POPPY.—Among the various novelties introduced last season there was none more striking or beautiful than the new tulip-flowered poppy. In form and color it resembles an immense blazing tulip, being of the most brilliant and intense scarlet, and forming a perfect tulip cup with its two outer petals in which the inner petals stand erect and make a very dainty sort of pouch. As the flower grows older deep black spots appear at the base of the petals. Almost every one is aware that to insure success with poppies the seeds should be sown very early in the spring in order that the plants may make good growth before their blooming season, but with this lovely variety I would also advise a second sowing in May, as one may then have them in bloom until frost. Sow them in a bed or in clumps by themselves, and the richly glowing scarlet will form a color effect beautiful beyond description. Unless one is skilled in transplanting it is wiser to sow the seeds where the plants are to bloom, but to insure very early bloom seeds may be sown early in the house and planted out when the second pair of leaves are well grown. If the roots are disturbed much the plant usually dies, although it is said dipping them gently in wet mud so that each delicate thread-like root is well coated makes transplanting perfectly safe. No matter how many other beautiful flowers you may have there can be none more brilliantly lovely than this poppy.—Vicks.

AN INTERESTING EXPERIENCE IN SECURING MEMBERS.

The writer of the following letter, with what seems to the editor as unnecessary modesty, declines to have his name appear in connection with it and even objects to having the letter printed, but nevertheless it contains a lesson of such practical value that it has been thought best to print it entire in this number. Dear fellow-members, after reading this letter, can you not make the suggestions that it contains practical in your own locality. You can do a great deal of good in this way for your neighborhood as well as materially assist the society. There are, as you know, a number of valuable books offered by the society as premiums to those who secure new members. Should you take up this work you would be able to secure all of these valuable books and perhaps have some duplicates also to present to your neighbors, as has been done by the writer of the following letter.—Secy.

Madelia, Minnesota, Feb. 1st, 1904.

Sec. A. W. Latham. Dear Sir: In looking over the list of members of the horticultural society, and adding the newly acquired names from Madelia, it appears that we have more members than any town in the state except Minneapolis. Now when I think how easy it was for me to add enough names to put Madelia in that position, it seems that the membership might be extended almost indefinitely. I think you might find around every little center like Madelia some one to take up the work.

I spent about two hours in the middle of each day for one week in securing about fifty names. There have been heretofore very few members from this county. These names were almost all obtained near Madelia. We have three more centers in this county that should furnish as many names as Madelia, viz.: St. James, Freeman and Lewisville.

I equipped myself with a copy of your last annual, one year's issues of the monthly, and a good specimen of the Patten's Greening apple. The apple was to impress upon their minds the value of the trees which they would receive as a premium. I showed them the annual, calling their attention to the index showing the subjects taken up in one year. This they were to receive immediately. I called their attention to the monthlies and the apple tree premiums. When these are presented they look what they really are, a good deal for the money. I appealed to the state pride of some, telling them we had the largest society of the kind in the United States. I also mentioned the fact of our having captured the Wilder medal last fall at Boston.

To one man who has boys—the publications of the society may be the instrument of making them better contented at home; to an-

other the planting of orchards and other improvements advanced by the work of the society will add to the value of every farm. There are many suggestions which may be brought to bear and at the same time make no overdrawn statements. It seems to me with your large acquaintance you might find some one around every business center who can be enlisted in this cause.

I remain yours,

* * * *

RADISHES FROM LARGE AND SMALL SEED.

Illustration shows the effect on maturity of radishes from large seed as compared with those from small seed. In the illustration the five radishes to the left were grown from large, selected seed, and those to the right were grown from small, selected seed. This illustration shows very plainly the difference. We give a practical lesson of this kind to all our students. and it is seldom that they fail to get good results in this work, which shows that the results are very uniform. PROF. SAMUEL B. GREEN.

Secretary's Corner.

GOOD WORDS FOR THE SOCIETY.—"I became a member of your society and received some valuable literature which was worth ten times as much as I paid." IVER NELSON.

PLUMS INJURED BY THE WINTER.—In a letter from W. J. Tingley, Withrow, (near Stillwater), he says, "I was out in the orchard on Feb. 18th. The Surprise, Stoddard and Miner plums are killed about a foot on the tops."

THE RED RIVER VALLEY HORTICULTURAL SOCIETY.—This new organization will hold its first annual meeting at Crookston on, Saturday, March 5. As far as possible members convenient to that locality are urged to be present at this gathering, which should be the means of making that society a strong organization.

WINNIPEG HORTICULTURAL SOCIETY.—This society will hold its annual meeting Friday, Feb. 26, in the City Hall in Winnipeg. We note the railroads of Manitoba carry members to and from this meeting at one-half fare. The bee-keepers and other agricultural associations meet during the same week in Winnipeg.

MEMBERSHIP IN THE NORTH DAKOTA HORTICULTURAL SOCIETY.—Secretary C. B. Waldron, of the North Dakota Society, has sent in a list of 135 members. Pretty good for a new society, and he says there are more to follow. Perhaps the Minnesota Society may have to look to its laurels yet in the matter of membership.

CONDITION OF THE CHERRY TREES AT DRESBACH.—A letter from W. S. Widmoyer, of Dresbach, Minn., dated Feb. 11, says "have just examined the fruit buds on the cherry trees. They seem to be about fifty per cent injured. Can't see much difference between the varieties. Probably the Wragg and Homer Morello show up a little the best, but it will take more time to be certain."

SELECT YOUR PREMIUMS.—To secure the plant premiums offered by the society, all applications must be received prior to April first, and no premiums can be selected until the annual membership fee is paid. Quite a number of those who are receiving the magazine have not yet found it convenient to remit the annual fee. To give this attention prior to April first will insure the privilege of selecting these plant premiums. These premiums are all of practical value.

FRUIT TREES ON THEIR OWN ROOTS.—A correspondent sends in the following question, and short answers to this are desired, to be published in the Secretary's Corner. "Are there any parties in the northwest or elsewhere growing hardy varieties of fruit trees on their own roots? Have such trees been tested to form comparisons with trees as ordinarily propagated?" Any of the members with experience in this direction either with plums or apples are requested to reply.

REPORT FROM ANDREW WILFERT'S ORCHARD.—A letter received from Mr. Andrew Wilfert, Cleveland, Minn., under date of February 8th says, "Have faith and you can remove mountains! Faith and my invigorator protects my trees. Forty below zero does not injure them. Last Friday the weather turned quite warm, so I went around and examined my trees and didn't find any discoloration of wood of last summer's growth. So I have no reason to be alarmed."

MCLEOD COUNTY HORTICULTURAL SOCIETY.—Capt. A. H. Reed, of Glencoe, one of the vice-presidents of this society, is bending his energies to the organization of a local horticultural society at Glencoe, his home town. His example may well be followed in other localities and without doubt successfully as far as members can be found who are willing to devote some time and industry to this work. A local society, however, to be of special use should hold regular meetings, and discuss questions pertaining to local horticultural problems.

MINNESOTA HORTICULTURE AT THE ST. LOUIS EXPOSITION.—The plans of the structure to be used at the St. Louis Exposition upon which to display Minnesota fruit have been completed and accepted by the management. They are shown in this number of the magazine in connection with the report on the fruit exhibit read at the late winter meeting. The contract has been let for this structure, and if present plans are carried out it will be shipped to St. Louis, together with the canned fruits that have been prepared to use with the exhibit, about the fifteenth of March, weather permitting.

ANNUAL MEETING OF THE SOUTHERN MINNESOTA SOCIETY.—The Southern Minnesota Horticultural Society has decided to hold an annual meeting at Albert Lea on Feb. 25, and an interesting program for the one day session has been issued. There has been a change in the secretaryship in that society, Mr. L. P. H. Highby, of Albert Lea, having been appointed to succeed Mr. Jonathan Freeman, resigned. Mr. Freeman has held this office for a number of years and shown great zeal and loyalty in connection with the duties of the office.

HOW TO SECURE NEW MEMBERS.—A very zealous member of our society, living at Madelia, has sent in, since the beginning of the year, something over fifty new members, and in a letter he speaks of the method used in securing them. The attention of our readers is called to this letter, which is printed elsewhere in this number. The field is an open one, and there is nothing to prevent other members from using these or similar methods to accomplish similar results. Our membership ought to be in the thousands instead of where it now is, although we are the largest society in the country. Dear fellow members, what have you been doing this year to help increase this roll?

SIAS AND HIS BIG SIOUX.—Our friend, A. W. Sias, of Harbor View, Fla., who still persists in signing himself "Sam Bucus," has just sent the secretary, by mail, one of his Big Sioux grape fruits, measuring 19½ inches in circumference, big enough for a small pumpkin. It is evidently a variety of fruit that keeps well, as he says he picked his Big Sioux nearly three month's ago and they are yet sound and good. He writes that he will try to call at our stall at the St. Louis Exposition about thirty-eight years from the day that the Minnesota Fruit Grower's Association opened up, which will be Oct. 4th, 1904, if we are not mistaken. The secretary will be glad to be corrected if this date is given wrong.

A Strawberry Note Criticized.—By reading a newspaper clipping reprinted on page 76 of the February magazine, readers will understand better the following criticism on it offered by Mr. A. Brackett: "In the first place strawberry ground should be manured sufficiently to last as long as it pays to keep the bed before it should be renewed, which is from two to three years. I don't think strawberry plants are injured by the ground freezing in the fall. It is the freezing and thawing that hurts the plants. I do not think it a good plan to leave more than one inch of covering on the plants in the spring. The thicker the mulch of straw or hay between the rows, the cleaner the berries will be. I have seen people who preferred having their berries lie on straw and hay in preference to manure."

The Present Condition of Minnesota Fruits.—Very meager reports have come into the office in regard to the condition of fruits and as to whether any injury has been sustained from the severity of the weather. While it is known that some harm has been done to half-hardy trees, it is not thought that any serious injury has been sustained by such varieties as are ordinarily considered safe to plant in Minnesota. Cherries and some kinds of plums show a little injury, but in general the outlook is a very hopeful one. Plenty of moisture in the ground last fall and a good layer of snow at the time of the severe weather are conditions that may be considered favorable. A few notes from correspondents appear in this Corner.

Wisconsin Society Has a New Secretary.—Frederick Cranefield, assistant in the office of the professor of horticulture at the Wisconsin Experiment Station, has been elected secretary of the Wisconsin Horticultural Society, succeeding J. L. Herbst, who has held the office for several years. It was voted to give the new secretary $1,200 and that he should keep an office in Madison and attend to the five trial stations in the different parts of the state. The Wisconsin society can afford to do this, as they now have an annual appropriation of $4000.

Apple Seed as a Special Premium.—We have on hand a limited amount of apple seed mostly gathered from the larger and hardier varieties of apples fruiting at the experiment station this year. It is very desirable that this seed be planted largely in this state for the purpose of growing and originating new varieties of choice apples and seedlings of value. Three ounces of this selected seed is offered to any one of our members who secures and sends in the name of a new member. Please send in a new member speedily, and you can easily secure one by showing what the society has to offer them for $1.00, and we will send you by mail three ounces of this choice seed. It should be left in moist sand and set where it will freeze, if it is not too late, and planted early in well pulverized soil. You will certainly grow many interesting seedlings, and if you want to make root grafts of them they will be very valuable for that purpose.

Or if preferred one-half ounce of this seed will be given as a special premium when asked for, in addition to the regular book premiums, to each member sending in a new member before the first of April.

PARTIAL VIEW OF A TRIFLE OVER AN ACRE OF STRAWBERRIES, ON FRUIT FARM OF A. BRACKETT, EXCELSIOR, THAT YIELDED IN 1903 11,000 QUARTS WHICH SOLD FOR $600.00.

THE MINNESOTA HORTICULTURIST.

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FIELD CULTURE OF STRAWBERRIES.

A. BRACKETT, EXCELSIOR.

The first thing to consider is location, which I think can be found and should be found upon everybody's land, whether he owns a town lot or an entire section of land. The next thing is the fertility of the soil. I think that a soil which is naturally fertile, one that will grow potatoes and corn, is better than one fertilized by manure. If the ground is foul with weeds and has not been taken care of, that is, if it is thoroughly seeded with weeds, such ground should be prepared at least a year beforehand. I thoroughly manure my ground with strawy manure from the stable, spread it all over the ground and plow it under in the fall, but I do not harrow it. Next spring after the weeds come up I harrow the ground and then plow the weeds under, and I keep it harrowed and plowed until the first of July. At that time I seed it down to buckwheat, three pecks to the acre, and before it comes into seed I plow it under, let it lie until spring and then smooth it down with harrow and planker. In that way the ground is made thoroughly fine, it is free from weeds and it is mechanically in the best shape it can be put into. It seldom bakes. The weed seeds have nearly all started to grow and have been destroyed. You will find this preparatory work will pay you in the future cultivation.

After I have the ground in the condition desired, I mark it with a corn marker, making the rows five feet one way and two feet the other, or four and one-half if you are short of land.

I will now give you my method of planting, having my land marked off in good shape. I take my plants up with the spading fork, put them in baskets and take them to the packing house, where I have men to trim them, taking off the runners and surplus leaves. I find two men and a boy constitute the best force for planting.

The plants are dipped in muddy water, and then a boy takes the plants in a basket and drops them in their proper places, two rows at a time, and two men follow up and do the planting. I use a comman garden hoe, the handle shortened and one side of the hoe cut off. With one motion of the hoe I draw away from the surface the dry earth; then I strike the hoe into the earth, draw it toward me, set the plant in the cavity, let the earth on the hoe drop back and firm it about the plant with my foot. The secret is to firm the earth about the roots. After the plants are well started, say in the course of a week, I commence to cultivate, and I use for that purpose the Planet Jr. cultivator with a shovel that cuts off all the weeds below

Foliage of the Senator Dunlap; from a patch grown for plants.

the surface; it keeps the ground loose, and you can run close to the plant and yet it does not throw any earth. I follow up cultivation until it freezes in the fall, and then I cover with straw or coarse hay. I cover them only deep enough so I cannot see the plants. In the spring I remove enough of the covering so the plants can come through readily, and I leave the straw or hay between the rows as a mulch. After the vines are through bearing I mow them off as close to the ground as possible, and after they are thoroughly dry I set fire to them and burn them up. In that way all weed seeds and insects are destroyed. It does not injure the vines once in ten times, but if it does plow them up and set out new ones. It puts

the ground in better shape and makes it easier to cultivate than any other way I have ever tried.

In the growing of plants for the plants alone you can make your ground as rich as you please, but for fruit you may often get your ground too rich. The growing of strawberries for plants or for fruit are entirely different things.

Mr. W. L. Taylor: In raising plants and manuring quite heavily, don't you get your plants into the habit of not bearing as freely as they otherwise would?

Mr. Brackett: I have never experienced any trouble of that kind. I think a well grown plant having good roots is all we need. I do not think heavy manuring affects the future bearing of the plant at all.

Mr. W. H. Getchell: What about varieties?

Mr. Brackett: I think the Senator Dunlap is ahead of anything else we have. The berries are solid and of a very fine quality. I have some forty varieties, but I think the Senator Dunlap leads them all.

Mr. A. D. Barnes: What is your soil?

Mr. Brackett: Mine is a clay subsoil with a black loam.

Mr. Barnes: Do they root deep?

Mr. Brackett: Yes, very deep.

Mr. Oliver Gibbs: What is the name of the cultivator you say you use?

Mr. Brackett: It is the Planet Jr.

Mr. W. H. Getchell: What plan of planting do you find best?

Mr. Brackett: I explained that before. By the method I suggested we plant an acre and a quarter a day. Out of one particular acre and a half field, I found only six plants that did not grow. One advantage of planting with the hoe is that you get no dry dirt around the plant. With one motion of the hoe you can scrape the dry dirt away from the surface so you leave nothing but moist earth exposed.

Mr. W. L. Taylor: In cultivating, do you go twice through a row or only once?

Mr. Brackett: That is a point I ought to have mentioned. I cultivate both ways. I go first one way and then the other until the vines commence to run, and then I only cultivate one way.

Mr. Wyman Elliot: Do you employ horse or hand cultivation?

Mr. Brackett: I use the horse entirely. One man spent only a day and a half on this acre and a half with the hoe. Those shovels will run closer to the plants than any shovel you can possibly devise.

Prof. Washburn: I would like to inquire whether you are troubled with insects?

Mr. Brackett: I have always kept my bed in healthy condition by burning it off, and I have never used much rotted manure, so I have never been bothered with the grub or other insects. The main trouble I have had was with blight, but that was not very serious except with the Bederwood and Warfield. I use Bordeaux mixture and spray my vines twice a year.

Mr. Elliot: At what time?

Mr. Brackett: Early in the spring and just before the fruit begins to set. I always dip all my plants in Bordeaux mixture before setting them. That makes them free from any disease before they are planted.

Mr. C. C. Hunter: Do you firm the dirt around the plant?

Mr. Brackett: I put my whole weight on the dirt when I let it drop back from the hoe. I draw the dirt away with one motion of the hoe, then set my plant and let the dirt drop back and step on it, and then I push a little loose dirt over the place where I firmed it. I never knew a man who planted a half acre of strawberries with the hoe who did not use it ever afterward.

Prof. Robertson: What variety would you use for a small bed?

Mr. Brackett: I would plant the Senator Dunlap. My wife would have nothing else but the Senator Dunlap for canning.

Mr. S. O. Tuve: How deep a hole do you make?

Mr. Brackett: I dig deep enough so the plant will set at the proper depth, and then I remove my hoe and press the dirt with my foot.

Mr. Gust. Johnson: What is your experience with the Countess?

Mr. Brackett: I should judge it was pretty good, but I have never given it a thorough trial.

THE HORTICULTURAL NEEDS OF THE MINNESOTA FARMER.

FRANK YAHNKE, WINONA.

The interest in horticulture has been increasing in this state for the last few years. The state fair, with its splendid fruit exposition, the horticultural society, the farmer's institute, all have helped to awaken this interest. It is now the duty of the above mentioned institute to foster these awakened interests until every farmer in this state grows his own fruit and we have enough commercial growers to supply the demand of our cities. The press is awakened to the importance of horticultural interests.

There is no farm journal of note which has not a horticultural editor; the daily papers pay attention to horticulture; but, however, great effort ought to be made by all these means to reach every man, women and child in the country, so that every one may be interested in horticulture, and that our country schoolhouses, instead of being the most forlorn places, should be the most beautiful and object lessons to all passersby. Is it not a shame to the public that the place where the farmers' children spend the best time of their lives is so bare of all beauty and homelike surroundings? Is this not a reason why so many children will not stay on the old home farm?

Every farmer in this great state ought to be a member of the State Horticultural Society, and when this end is reached every farmer will have at least fruit of his own growing in abundance, and the home beautifully surrounded with ornamental trees and shrubs.

The man who tills the soil is entitled to the best the soil produces. Why then should he not have the luxuries of fresh, home grown fruits and vegetables, for which his city cousin pays large sums—and then is sometimes unable to obtain them—while the farmer can have them with a little work, as well as he has his fresh butter, milk and eggs?

There is no farmer in Minnesota who has not a location for an orchard, whether he is situated on the prairie or in the valley. It is generally understood that an eastern or northern slope is desirable, but, however, any land where corn can be grown can be used for an orchard.

On the prairie a shelter belt is necessary. Last winter I saw an orchard of 500 trees on the prairie which was in a finer condition than I ever saw any other orchard in the west. It had a shelter belt of willows and evergreens on the south side, and in the center of the shelter belt the house and farm buildings were located. It was a beautiful home, and when I asked the owner where he learned all this he answered "at the State Horticultural Society." When every farmer has the needed information about fruit growing, the expression that the farmer can buy his fruit cheaper than he can grow it will not be any more heard.

The value of fruit on the farm is not as small as often it is thought to be. For an ordinary family on the farm it takes about fifty bushels of apples, fifty crates of strawberries, twenty-five of raspberries, ten crates of currants, five crates of gooseberries, besides bushels of plums and cherries. If these have to be bought it will cost from $175 to $200. But these can all be grown on one acre. Who can say that it does not pay the farmer to grow his own fruit.

How to do it? you ask: After the orchard site is selected (which should be near the home if possible) prepare the soil as well as for a garden. Lay out half for apple trees, 20x20 feet apart, and for plums and cherries the rows should be twenty feet apart and the trees in the rows ten feet apart. The small fruits can be grown between the rows. Plant the small fruits so that all can be worked with a single horse plow and horse hoe, and you will find that it is not such hard work after all to grow the fruits for a family. As long as the trees are small vegetables can be grown be-

tween the trees also. No farmer can afford to be without a vegetable garden.

How to plant the trees: Dig the holes for the trees sufficiently deep and large so that when the trees are planted the roots can be spread out to their natural position. Then throw some top soil between and on the roots and press it solid. When the soil is dry pour a half pail of water to each tree; when the hole is half filled with dirt and when the tree is planted there ought to be a little sag around the tree to keep the rain water. The man who loves his trees will find it a pleasure to work and take care of them.

The pruning if followed up every year can most all be done with a pruning shears or a knife, and when no other work is crowding. The best time to do it is when your pruning shears or knife is sharp.

To avoid disastrous mistakes in buying your nursery stock, never buy of a man who does not represent a nursery at all or one from a far distant state, or of a man who wants to plant you a so-called "model orchard," or warrants every tree to live. Always bear in mind that such a man has nothing to give away, and what you get of him at the best you have to pay dear for, and besides you are deceived and the result will be discouragement.

Buy of responsible firms of your own state at honest prices and take your own risks after the trees and plants arrive, and you will not have to complain about dishonest nurserymen and the sharks.

In selecting your trees and plants, take the fruit list of the State Horticultural Society as a guide and observe what does the best in your neighborhood. In buying strawberry plants be very careful to select varieties with perfect blossoms, or if imperfect flowering varieties are planted they must be alternated with the perfect in order to be fertilized to bring a crop of fruit.

Last but not least, the young men of the farms ought to be sent to the State Agricultural College for a course in agricultural training, to be well prepared for their future work on the farm. The farmer needs college education as well as the doctor or lawyer. A successful farmer needs to know more than a congressman. The Minnesota College of Agriculture has a faculty which is well able to warrant the best results. The professors are not alone educated men, but they are also very practical, and the young man who has been under their training cannot help but make some of their knowledge his own and be a light in his neighborhood.

FILES OF REPORTS SENT OUT IN 1903.

E. A. CUZNER, ASST. LIBRARIAN.

Jan. 3, 1903, Thomas E. Cashman, Owatonna.
Jan. 3, 1903, M. R. Cashman, Owatonna.
Jan. 3, 1903, W. H. Hart, Owatonna.
Jan. 10, 1903, Preston McCulley, Maple Plaine.
Jan. 20, 1903, B. E. St. John, Fairmont.
Jan. 22, 1903, U. S. Pomologist, Washington, D. C.
Feb. 26, 1903, W. A. Peterson, 164 La Salle St., Chicago, Ill.
April 2, 1903, Otto Schell, New Ulm.
April 16, 1903, Hon. F. W. Taylor, Dept. of Hort., St. Louis, Mo.
April 11, F. F. Fletcher, Minneapolis.
Prof. F. Wm. Rane, Durham, N. H., care N. H. College.
Aug. 1, 1903, Lloyd Library, Cincinnati, Ohio.
Oct. 15, 1903, A. A. Thomas, 2479 Kenmore Ave., Chicago, Ill.
Nov. 5, 1903, Rev. P. M. McTeague, Preston, Minn.
Dec. 26, 1903, Peter Siverts, Canby.
Dec. 26, 1903, G. A. Anderson, Renville.
Dec. 26, 1903, Paul Burtzlaff, Stillwater.
Dec. 26, 1903, M. A. Eliason, Appleton.
Dec. 26, 1903, Prof. N. E. Hansen, Brookings, S. D.

THE WISCONSIN STATE HORTICULTURAL SOCIETY.

A. D. BARNES, DELEGATE FROM WISCONSIN.

We come to you with cordial greetings, loyal praises, and humbled thanksgivings to one Deity, the Giver of all good, for the great blessings and prosperity, the bountiful crops, health, happiness and luxuries of the past seasons. Surely we ought to be grateful and bow with humble submission and piety for all these and other untold blessings.

Death has called from our front-ranks only two of our number during the past year. Our honored and respected Z. K. Jewett, of Sparta, and Henry Tarrant, of Janesville, have gone hence from among us—and I know you, too, with us mourn their departure. Their work is done, their last tree is planted, their last vine trimmed, they surely have gone to their reward. They were good men, and we trust the world has been made better for their having lived in it. We shall miss them and their congenial greetings, their sober and careful council, their examples and influences.

Drought, deluges, pests and cyclones have not been numerous nor devastating; frosts, blight and vermin less destructive than for many seasons past. Crops, with the exception of fruits and potatoes, have been abundant, prices on almost everything satisfactory. Scarcity of competent, willing and trustworthy laborers is the greatest discouragement and defeat to rural prosperity, yet I feel safe

in saying that rural prosperity has never been greater since our state was settled. More fine houses have been built, more homes made, more orchards planted, more attention paid to floriculture and landscape gardening. Public sentiment is turning with jealousy to the happy and prosperous farm homes. City folks are seeking suburban homes, country outings and in many cases even country homes. Lands have increased in value 10 to 25 per cent our state over. Telephones, free rural mail deliveries and the interurban railroads are making progress all over our state. Any one of these grand enterprises is almost equal to the advent of the railroads, and the three combined are wonderfully elevating factors. Public sentiment and citizen-committees are weeding out corrupt politicians and evil doers. Legislative influence and public sentiment are

A. D. Barnes, Waupaca, Wis.

turned towards our forest preserves and water supplies. The construction of good roads must ever be our ambition.

Churches and schools have never been better patronized, and their influences are marked; social cordiality has never been so promising and congenial between country and city people as today. Our horticultural achievements along the nursery lines, so far as the production and disseminating of our goods go, are indeed flattering, and Wisconsin goods for the Wisconsin planter is the demand now.

Our progress along the line of seedling experiments is marked with great success, and it shall be the writer's effort to create out of the treasury a seedling apple fund, which shall be used for the production, testing and disseminating of our seedling apples—and I sincerely solicit your co-operation in this worthy enterprise. Our

interests are mutual and our environments so identical that we surely can join hands in this enterprise.

Our society consists of eleven honorary life, twelve honorary annual, twenty-five life and 126 annual members, a total of 174. Our treasury is well stocked and our appropriations are adequate for all demands.

Our appropriation for the Louisiana Purchase Exposition is $5,000. We have secured a fine site near the entrance of the Agricultural Building of 1176 square feet and 166 feet of aisle frontage, where we want you all to come and see us. We have at this time 699 bushels of our top apples in cold storage, consisting of fifty varieties, including (as our chairman informs me) about 100 bushels of our wonderful and famous Northwestern Greenings. That will be the center of attraction for our opening at St. Louis.

We have several local societies auxiliary to our state society which are doing great good and enthusing efforts along this line.

We have located one new trial orchard the past season at Poplar, about twenty miles from Superior. Our orchard at Wausau did finely the past season and produced a fine crop of splendid apples, cherries and plums, and it has been the means of encouraging the planting of many trees in that section of the state.

Personally, I am not satisfied with the management and control of these orchards. I believe the lands should be owned by the state, and a competent man should be employed the year around at such orchards.

We are sending delegates to Minnesota, N. E. Iowa, Iowa State, Northern Illinois, Illinois State, Michigan and Missouri conventions, and we extend a cordial invitation to any and all of you to be with us at our annual meeting, to be held at Madison in the first full week in February next. Cordially submitted,

The Chairman: A man who can go through life and reach the age Mr. Barnes has reached and still feel so optimistic should certainly be congratulated, and I think you will all join me in congratulating Mr. Barnes on his fine optimism.

How They Kill Moles at the World's Fair.—"The mole takes his meals regularly at 6 a. m., noon and 6 p. m., and at any of these hours is the time to catch him.

"The ridges made by the mole must be beaten down, and watched. When the mole goes over the route again the ridge is again raised. Then the process is easy. Take a spade, drive it in the ground across the mole's route and behind him. Unless this is done he will skurry underground and find safety in one of the deep holes that he has provided for emergencies. But the spade stops his progress, and he may be easily dug out and dispatched. In less than a month the moles were banished from the agricultural section of the World's Fair."

WISCONSIN STATE HORTICULTURAL SOCIETY, ANNUAL MEETING, 1904.

THOS. E. CASHMAN, DELEGATE, OWATONNA.

Your delegate from Minnesota enjoyed a rare treat at the Wisconsin horticultural meeting, held at Madison, Wis., Feb. 2nd to 5th inclusive. A more congenial body of gentlemen is rarely found than those whom it was my good fortune to meet at the Wisconsin meeting.

The attendance was good, and the papers and discussions were very interesting and instructive. George J. Kellogg, of Lake Mills, gave some valuable information on "Strawberry Notes for 1904." J. J. Mens, Norfolk, recommended that more attention be paid to small fruits and farm products by fair associations and that larger premiums should be offered to encourage the producers to exhibit.

L. H. Palmer, a successful fruit grower of Baraboo, Wis., gave a very interesting paper. He recommended thorough spraying and stated that out of 1,500 barrels of apples marketed this year he did not have one barrel of culls. Mr. A. J. Barnes, delegate to the Minnesota horticultural meeting, gave a very glowing report of the good attendance and fine display of fruit at the Minnesota meeting. Delegates from other states, including your delegate, were received with the usual courtesy and made honorary members.

Pres. Dr. Loope, in his address, recommended that a new trial station be established in the western part of the state to determine more fully the value of new varieties. Mr. C. G. Patten, Charles City, Ia., gave a very interesting extemporaneous talk on "Cross-Fertilization."

The officers elected for the coming year are Pres., Dr. T. E. Loope; Sec'y, F. Cranefield; Treas., L. G. Kellogg; Vice-Pres., Geo. J. Kellogg.

"Land Which Needs Drainage and How to Grade" was ably handled by Irving C. Smith, Green Bay, Wis. He stated that tile should be laid down from two to three feet deep and for every foot of depth that tile is laid it will drain a distance of one rod on either side.

The long course students in the Horticultural Dept., University of Wis., A. H. Christman, A. C. McLean, H. Breckinstrale, Jas. Milward and A. T. Henry, all gave splendid papers. We shall hear from these young men later.

The paper on "Spraying" given by Jas. Milward, brought on a very instructive discussion in which C. F. Hall, of Shelby, Mich., participated and gave a valuable talk. He says that by spraying with one lb. of blue vitriol to fifty gallons of water before the buds

begin to swell that the curculio and plum gouger can be killed, and that the trees should be sprayed again after the blossoms fall off with Bordeaux mixture. The vitriol may be put on at any time from Feb. 1st to Apr. 1st on all kinds of trees with gratifying results. He also stated that every part of the tree should be thoroughly sprayed and that it should not be delayed when the season arrives on account of wet weather. Spray whether wet or dry. He recommended the Morley & Morley spray pump, manufactured at Benton Harbor, Mich. He also said that if the orchard received thorough, clean cultivation and thorough spraying each year it could be kept free from insect pests. This valuable information comes from one of the most successful fruit growers in Michigan, who knows what he is talking about, and I hope our Minnesota orchardists will make use of it this season.

SOUTH DAKOTA STATE HORTICULTURAL SOCIETY, ANNUAL MEETING, 1904.

D. M. MITCHELL, DELEGATE, OWATONNA.

The meeting was called to order Tuesday morning by the President, P. J. Bentz, of Woonsocket. After the address of welcome, response, etc., the meeting very soon took up horticultural topics. Small fruits was the principal topic of discussion the balance of Tuesday forenoon. The fore part of Tuesday afternoon session was devoted to the president's address and official reports, the latter part of the afternoon chiefly to vegetable topics. Papers and discussions of flowers occupied Tuesday evening session. "How to Secure Continuous Bloom in Outdoor Horticulture" and "Some Cultivated and Native Flowers That Do Well in South Dakota" were both good, in fact quite a revelation to any one not familiar with South Dakota floriculture.

Wednesday was especially interesting. The whole forenoon was devoted to fruit growing and orcharding. Many interesting papers were read showing what is being done in different parts of South Dakota. C. G. Patten, of Charles City, Ia., gave a paper on "Tree Culture in South Dakota." Mr. Patten showed himself by his paper to be familiar with conditions in South Dakota as well as in his own state. Wednesday afternoon session was along nearly the same line as the forenoon. Many practical points were brought out; plums and cherries came in for their share of discussion, seedling apples and plums, and essentials in propagation of trees and plants, were given their place on the program. Wednesday evening was devoted to various subjects. Some interesting experiences were related.

Report of delegate to our meeting was given. Evergreens were discussed to considerable extent. History of the South Dakota Horticultural Society showed that their society, as well as others, had worked under adverse conditions. Prof. Hansen's "Notes from the Experiment Station" were instructive.

Thursday morning session was devoted principally to revision of the fruit list and election of officers. The following were chosen: John H. Miller, Huron, president; C. W. Gurney, Yankton, vice-president; N. E. Hansen, Brookings, secretary; E. D. Cowles, Vermillion, librarian. Display of fruit at St. Louis was brought up several times during the meeting, and South Dakota expects to make a good showing at the fair.

The next annual meeting will be held at Huron. Great enthusiasm was shown as to the possibilities of horticulture in South Dakota. Their society in number is comparatively small but composed of faithful workers.

NOTES ON FORESTRY.

REV. C. S. HARRISON, YORK, NEB.

(A Talk.)

I was very anxious to be present at this meeting. We are doing something in the forestry line in Nebraska, both in conserving forests and planting new forests. About one-fourth of Nebraska is desolate. I believe every acre of this waste land ought to be made productive. The waste acre is a bad thing. The government is at work and has assumed the task of foresting the sand hills. There is no reason why they cannot succeed. For several years I had an experiment station under the 100th meridian and was testing forestry in the regions beyond. We can irrigate that great waste by what is called the Campbell system, and I believe in that way a great deal can be done. So far as the value of prairie timber cultivation is concerned, they have some fair examples down in Kansas. There are plantations there of several hundred acres planted with catalpa. The catalpa is cut and sprouts again and gives a straight, fine post. The green ash is used successfully as a forest tree, and there is a good deal of money in it.

There is a little matter I wish to speak of, and that is about the opening of a new park on the eastern verge of the Rocky Mountains in El Paso and Pueblo counties. I have been familiar with that region for twenty years, and it is one of the most delightful in the world. Most of our national parks are so far removed from the people that they are hardly accessible. I would like to put this society back of the proposition to open this new park as soon as possible, and I hope you will move through your representatives in congress to open roads. It is necessary to urge this measure as soon as possible. This park commences thirty-five miles southwest

of Pueblo. It is full of beauty and grandeur. There are very many trees, and they are beautiful. We have all kinds of pines, and as you go through that region you find it is a perfect paradise of the most beautiful trees you ever beheld, and you will find there the beautiful silver robed tree of the Rockies. Men are sneaking in there, and if they are not checked they will soon denude that region of those magnificent trees. Arizona has been almost desolated on account of this greed. This is called the Wood Mountain Valley Reserve. I prepared a paper which I sent on to Washington, and they have acknowledged the receipt of it. This paper gives a description of the park and the reasons why it should be opened. It is most accessible to all of the great prairie states. If we wish to go to the Yellowstone Park we have to go down into our pockets to the tune of about $125.00, and this park can be reached from Omaha at an expense of $20.00 for the round trip. Another advantage in having that park south of us is that people living in that sunny climate will not have to go from 100 above to where they find the water freezing, which is almost too much of a shock. My wife went with me to the Yellowstone Park this summer, and she wanted to know if it was possible to get away from this terrible heat, but a few mornings later she was not able to dress herself because her fingers were too numb with the cold. If you go from seven to eight hundred miles south of that you will find a superior grandeur and a greater diversity of timber, you will see what a desired advantage it is, and I think you will agree with me that this park should be opened.

Pres. Loring: I want to repeat what I said last year. The story seems almost incredible if it could not be corroborated. A gentlemen in Massachusetts purchased eighty acres of land on which there had been pine. Forty acres of that land was entirely clean. Forty acres remained with a few trees standing, and he re-seeded the land. The gentleman bought it sixty-five years ago. Sixty-five years ago he went in there and trimmed up the young trees, and during all his life he took great pleasure in trimming and caring for those trees in that forest, removing the trees as they needed removal and doing what was necessary for the proper care of the trees. Two or three years ago his son sold 700,000 feet of pine timber from those forty acres. I was a little frightened when I made the statement, but it was corroborated by Mr. Warren Manning, who lives in Massachusetts. This man took 700,000 feet of timber from those forty acres, which he sold for $10.00 a thousand. I ask the association now, and I simply repeat the question I asked then, what legacy can a man leave his children that will give him less trouble to accumulate than that? I saw in Massachusetts in a field some of the finest pine I ever saw in my life. I saw growing in a field this beautiful timber, and as I admired it a man came along and said, "It is beautiful, is it not?" The people of the neighborhood had enjoyed it for years. The man said, "I have seen potatoes growing in that field." So I speak of these things to encourage you to plant trees. There are trees growing in our parks in Minneapolis that I planted from seed, and they are more than eight inches in diameter

today. It does not take so long for the trees to grow. A lifetime is long when you look ahead, but it is very short when you look back. We of this association are trying to encourage the people to plant trees. We want to help the forestry board first. Then we want to help the people plant trees for their own use, plant them for the comfort they can get out of them. In a short trip I made recently I was delighted to see the change made during the last twenty-five years, yet I found many places where there was not a tree or a shrub in sight, and I pitied those people.

MINNESOTA FRUIT AT AMERICAN POMOLOGICAL SOCIETY MEETING.

WYMAN ELLIOT, MINNEAPOLIS.

(A talk.)

I suppose you all know that I went to Boston to attend the American Pomological meeting. I went down there for a purpose, and that was to show the people of northeastern Canada and the United States what we were doing in Minnesota in the way of growing seedling apples and other fruits. I took commercial varieties and seedlings, in all 184 plates. The larger proportion of them were seedling apples. There was one collection from the orchard of Mr. T. E. Perkins, of Red Wing, that consisted of 109 plates. That was put upon one table by itself, and when I tell you that there was nothing in that old horticultural hall that received one-half the attention that that collection of seedlings received you may think I am making a pretty broad statement. That is a fact. I had my son with me to help me put up and arrange the fruit and to answer the questions of people who were interested in our exhibit, and it kept two of us busy most of the time when we were in sight answering questions about the collection of fruit, and men who had devoted their whole lives to the interest of pomology came to me and said they had never seen any production placed upon the exhibition table that would equal that. When you come to consider the fact that out of an entire possibility of 174 trees, the seed from which they were produced being planted only ten years ago, and selecting from the 132 fruiting this year 109 plates to take down to make an exhibition and which brought back the Wilder medal, you may be sure that it was a pretty good advertisement for Minnesota.

I have the honor and the great pleasure of presenting to this society the Wilder medal. (Exhibiting the medal.) It is the highest form of award that the American Pomological Association has to present to the American public. It is considered by every organization of this kind the highest honor and something of the greatest value of anything they can get in the United States. To give you a short description of it: On one side is a profile of Marshall P. Wilder, who was instrumental in organizing the American Pomological Association in 1848. On the reverse side is engraved "Minnesota Horticultural Society for Minnesota Seedling Apples." When I came back with the announcement that we had received the medal some of the reporters got hold of it and came to interview me, and

one of them said that instead of raising Indian scalps we had gone to raising apples—and when you come to consider what we have done in the last forty years in fruit raising under adverse conditions which we have had to contend with, it seems to me it is something remarkable.

I want to show you the mother type of the Perkins' seedlings, which is the Malinda. (Exhibiting a plate of Malinda.) All these seedlings are from one tree and from one year's planting. The seed was planted only ten years ago, and some of those trees this year had a barrel to a barrel and a half of apples. Some were so heavily loaded that they had ten to a dozen props under them. I have here one variety (indicating), representing the Duchess type in color and striping, but more of the Malinda type in size and formation, but, of course, I cannot tell what the quality is because I have not had time to become familiar with it. There are so many of them that I cannot give you a definite description of them in regard to quality. Here is No. 28 (indicating), of which you will find a description in my report of yesterday morning. This (indicating) is a later apple, and this (indicating) is an early fall apple, and that (indicating) I consider of small value commercially. Here is another (indicating) that varies from the others, but I believe it is going to be a first class cooking apple, and we have some that are very much better than those I have shown for culinary purposes. In regard to season, we have them all the way from August to May, representing all the seasons. When we consider them from a scientific standpoint, this collection of apples is something remarkable, I met some of the best scientists in the country at Boston, and they all told me that from a scientific standpoint it was the best exhibition they had ever seen put up.

I want to say a word to you people who have been bringing seedlings here, just what I said to Mr. Perkins after making two visits to him this fall, one before the fair and one since. I want you to prepare your orchard for the best product you can get, prepare it in the best way you know how and get the advice of the best cultivators you are able to find. After consulting with one of them myself in whom I place a great deal of confidence, I recommended to him to sow a half bushel of wood ashes to every tree, not right around the trunk of the tree but where the roots can get at it, and also give it a mulching of manure, which he has done, and if the season is favorable next year we will go down to St. Louis and show them a sight that is worth looking at. And we want every seedling man that is here who has any seedling trees of any value to see if he cannot help his trees along a little, and then help us next September by sending the products of those trees to us, to bring back another medal. I know we will do it. We will go down there with our apples, and we will take a medal that will be worth something. (Applause.)

Prof. Hansen (So. Dakota): I had the pleasure of attending the Boston meeting of the American Pomological Society, and the thing that most attracted the attention of everybody was the magnificent display of the Minnesota Horticultural Society. I moved

about the floor a good deal, eavesdropping, I might say, and what I heard was certainly very complimentary to Minnesota. There seemed to be still so many people in the East with the idea in their minds that we were still scalping Indians, and it was a matter beyond the comprehension that we could raise apples in sufficient quantity to take the Wilder medal. It will pay you to put your money in exhibits of that kind as long as Dakota does not go down there. It will pay you.

Mr. Elliot: I just want to tell you a little incident that happened while I was there that impressed me. One day we were standing by this table when two bright Massachusetts girls came along. They went from one end of the table to the other looking at those apples, and at last they stopped and leaned over and said, "We would like to inquire about this collection of apples. We have seen something about it in our papers, and we want to know more about it." I explained to them what it was, and one of them turned to the other, "I am going home, and I am going to plant apple seeds. If that woman out there in Minnesota can produce apples in ten years and make such a display as this there is certainly some hope for me." That is missionary work. If we can do a little missionary work in the seedling line I think it will be a benefit to us and to everybody. I want you to think this thing over. I want you when you go home to save seeds of your best apples, and put it where it will not be too dry, keep it in a cool place until next spring, put it in water and soak it, put it out before freezing weather is over for two or three nights, and then plant it and care for it just as this lady planted and cared for it for two years, and you will soon see the good results of your work.

Mr. Probstfield: I have not taken the great care that Mr. Elliot recommends, but I have found out that the seeds which did the best were seeds that I planted when I had to cut a little ditch with an axe before the frost came out of the ground, and they came along best when the ground was frozen hard, and those that I planted in the fall soon after they were taken out of the apples did not do well at all. Those I planted in the spring were eaten up by worms. I just planted some a week ago before I came down here.

Mr. Perkins: Is it necessary to freeze the seeds to make them grow?

Mr. Elliot: It has been done without. It is not always necessary, but it is a good thing to do.

Mr. Perkins: These seeds were never frozen.

Mr. Taylor: What did you do with them?

Mr. Perkins: They were put in moist earth in the cellar and then planted when the season was suitable.

Mr. Elliot: I think you said they were sprouted in the house before planting?

Mr. Perkins: Well, they were sprouted in the apple; they were started in the apple. (Laughter.)

Mr. Kellogg (Wis.): You have not half done what you ought to have done in this city. Here you have this magnificent display of apples, and I venture to say there are not five hundred men in this

city who know anything about this exhibition. Why don't you invite the people to come in? I invited my son-in-law to come in. I told him there was a display of apples here that cost $50,000. It is worth more than that. The citizens ought to have been notified, the people of the city generally ought to have been notified to come in here and see these apples.

Sec'y Latham: I think probably Mr. Kellogg labors under a misapprehension of facts. The truth is that for as much as four weeks prior to this meeting it was thoroughly and extensively advertised in the daily papers, and certainly no one who takes a daily paper in this city or anywhere near, for that matter, can truthfully say they did not receive notice of this meeting coupled with a cordial invitation to attend, with a full statement of the nature of the display of apples and other fruit that would be made here. The whole trouble lies in the fact that people in the city are not sufficiently interested in the matter of fruit raising to take the time and trouble to come and see the fruit that is displayed here.

HORTICULTURAL VENTURES, WISE AND OTHERWISE.

DEWAIN COOK, JEFFERS.

The spring of 1885 I bought of a Mankato man a couple dozen apple trees, Duchess, Wealthy and Whitney's No. 20, the only kinds of apples, he said, that were recommended by the Minnesota State Horticultural Society. I planted them on my prairie farm, in Cottonwood county, and most of these trees are still alive, healthy and productive.

This same spring I set out two plum trees, a De Soto and a Weaver. The De Soto is now alive and in fair condition,. the Weaver died young. I think it root-killed.

Also at this time we went to a deserted farm and dug plants from a run-out strawberry bed. They were the only plants available at this time. We got a fine stand of plants but never a berry; they were all pistillates. In the spring of 1886 we set out a great variety of Russian fruit trees from the Iowa Agricultural College grounds, apples, plums, cherries, apricots and pears—about 250 trees. Out of this lot, if we except the Borovinka, which is only another name for the Duchess, only four apple trees, two each of Breskovka and Hibernal, have proved both hardy and productive. The pears, cherries, apricots and plums showed weakness the first winter, and we saved ourselves from much further loss by planting a Duchess apple tree about four feet in the row from each one of them.

In 1887 I planted twenty-five Forest Garden plum trees. In the season of 1890 they bore a nice little crop—that was before the advent into my orchard of the curculio, gouger, plum rot and borers. These plums were fine, although a little soft when ripe,

either for canning or for market. My friend Norby, the plum specialist of South Dakota, wrote me about this time that the Forest Garden was the tenderest in tree of all the American varieties; nevertheless the next spring I set out 100 plum trees, fifty Forest Garden and fifty De Soto alternately in one row. Every tree in this row lived and bore fruit, both varieties being strong self-fertilizers; but the plum pocket and the plum rot each season took nearly all the fruit of the Forest Garden, and the cold winters and the borers weakened the trees. We have been cutting them out until there is now not one of those Forest Garden trees left, but every one of those De Soto trees is alive and in fine condition.

Effects of sleet storm at Mr. Cook's. Willows, evergreens and apple trees.

The spring of 1888 we planted another great variety of Russian fruit trees, from the Iowa Agricultural College. These were mostly apples, some cherries, pears and plums; also twelve or fifteen varieties of apples from Prof. Porter, of the Minnesota Station; and several not well known American varieties of apples from A. W. Sias and from S. D. Richardson; and 100 Wealthy trees from M. J. Hoag, of Rochester. How many times have I since regretted that I did not at that time set out all Wealthy trees instead of so many Russians and seedlings!

At the meeting of this society in January, 1889, the Wealthy was dropped completely from our recommended fruit list, but those 100

Wealthy trees have grown and produced fruit, until, with the possible exception of the Duchess, they have proved the most profitable lot of apple trees that I have ever planted.

From this great variety of Russian trees and American seedlings, our two trees of the Cross apple and the twelve trees of the Antonovka have proved both hardy and productive; also five trees of the Borovinka besides ten trees of the Romna—which, as I have them, are identical with the Hibernal and are, of course, valuable.

About the year 1890 my friend, Jos. Wood, set out a variety of Russian apple trees from the Iowa Agricultural College. He told me lately that only one variety had any value and that was the Cross. If he had only planted Duchess and Wealthy instead of so many Russians how much better an orchard he would now have!

About the year 1894 a tree man arrived in our neighborhood. He was not an agent, he was an orchardist, he was one of the firm and hailed from Adrian—so he said. One of my neighbors gave him the attentive ear. The stock came in due time and was heeled in, and a written guarantee was given that the orchardist would be around in the spring, plant the trees, also care for them and replace any dead ones for a period of five years. A note was taken for the full amount, $183.00, and sold to the bank. The so-called nursery firm failed, the orchardist never came around to plant those trees or to replace any dead ones, the 500 Russian mulberries proved to be cottonwood seedlings. Only a few wrecks of trees are left in this orchard, but the Red Dutch currants and Houghton gooseberry plants have been very satisfactory.

In the autumn of 1896, my townsman entertained one of the model orchard agents from Princeton, Illinois, with the following result: Pear trees, Salome apple trees, May, June and July cherry trees, $1.00 each; evergreen blackberry plants $1.50 each, etc.; total, $80.00. Note taken and sold to the bank. Not a dollar's worth of fruit did my townsman grow nor is there a tree or plant now left to show for his horticultural venture.

In the spring of 1886, along with many other fruit trees, I planted two Martha crab trees, and how they did grow! But as the years went by they would be full of blossoms each May, but somehow they failed to bear. I frequently heard the remark made that the Martha did not bear, but I was sure that they would bear enough to make it all up when the trees got older—and didn't our horticultural society recommend it? So the spring of 1894 we set out twenty-five more Martha trees and thought that we had laid the foundation for our fortune, but while all our Martha trees have been in perfect health until this season and blossom very full we

have never had a bushel of fruit altogether from those Martha trees, two of which we have been growing for seventeen years.

The spring of 1899 I placed four swarms of bees about fifty feet away from my two largest Martha trees. These have increased until I now have about fifty swarms, but we still get no fruit from our Marthas.

But I have noticed since we placed bees in the orchard a remarkable increase in the blossom and spur blight on the Duchess, Wealthy and other varieties of apples.

Unfavarorable conditions at Mr. Cook's Trial Station. Effects of sleet storm.

The spring of 1892 we planted six each of Cheney and Ocheeda plum trees. They were on their own roots. Perhaps I injured them by too much manure and cultivation. They have not been satisfactory, though we did get one good crop from some grafted Cheney trees in another location. But we never could get anything worth mentioning from my Ocheeda plum trees, whatever the location, and are of the opinion that the proper place to plant an unproductive fruit tree of any kind is on a brush heap.

My first planting of the Weaver plum failed; my second and third plantings proved not true to name, and by that time my desire

for the Weaver for fruiting purposes had abated considerably. My friend, Jo. Wood, had been growing the Weaver some twelve years with the advantages of having it surrounded by other varieties of plums, and he also had several swarms of bees. During all of this time he only got one crop of Weavers, which was undersized and did not sell well in competition with other varieties.

The Weaver is healthy, thrifty and unproductive, just what I wanted for stock to top-work and increase the size of my many choice varieties of plums for exhibition purposes. Six years ago we bought and set out twenty of these Weaver trees, not expecting much fruit, and we have not been disappointed in that respect. Three years ago we began to top-work them. The spring of 1903, blossom and twig blight struck every one of those Weaver plum trees and nearly killed them, and I have doubts if they will ever recover enough to be valuable even for top-working.

The President: I would like to ask Mr. Cook whether he has the genuine Weaver plum?

Mr. Cook: Yes, I am very positive.

The President: For a long time it has seemed to me that the Weaver has not come up to the mark, and I do not know of any place where it has gained a strong foothold.

Prof. Green: Did you say the Ocheeda?

Mr. Cook: Yes, I said the Ocheeda especially and the Cheney generally.

Mr. N. C. Radebaugh: I can say that the Weaver out at Richfield, in the sandy country, has proved to be the greatest plum they have there. That is the way it goes; at some places it is of no value, and at others it does well. That is out here at Richfield, a little way beyond Minneapolis.

Prof. Green: I understood Mr. Cook to mention the Compass cherry.

Mr. Cook: It acted a good deal like the Weaver. The blossoms blighted right on the tree.

Mr. A. D. Barnes (Wis.): What is the Compass cherry good for anyway?

Mr. Cook: It makes nice jelly and sauce; it is better than any plum I know of.

Prof. Green: Does it rot a good deal?

Mr. Cook: Yes, fully as much as the plum.

Mr. P. J. Bentz (Wis.): I would like to ask what success he has had with the Early Richmond cherry?

Mr. Cook: I never grew the Early Richmond cherry. My neighbor has grown them, and they have done very well.

Mr. Bentz: How long has he grown them?

Mr. Cook: For the last six or eight years.

Mr. W. L. Taylor: Have you ever grown the Wragg cherry?

Mr. Cook: I have some growing, but they have not yet borne any fruit.

Mr. J. W. Murray: Do you raise enough to feed the birds?

Mr. Cook: I heard the question, but I don't want to answer it. (Laughter.)

Rev. C. S. Harrison (Neb.): Does the Russian mulberry do well with you?

Mr. Cook: It does pretty well.

Mr. Harrison: I had an orchard of cherries around which I planted mulberries, and the birds never touched the cherries.

Mr. S. D. Richardson: I have raised a good many cherries since I have been in Winnebago City, but the last two years I did not get many except from the Wragg. There has never been a season but what I got a few cherries from the Wragg. When I planted my Wragg cherries I got them from Silas Wilson. They were pruned way up to the top. I dug a ditch two feet deep at one end and sloping to the surface at the other, and I laid that tree down there in that ditch, but left the top out and covered the rest. Then I put a sod under the end of the tree and turned up the tip, and that is the way I got the Wragg cherry on its own roots. It is vigorous and healthy today. I find I can do better with a late cherry than with the Early Richmond. The birds take all of the Early Richmond. I would not think of raising cherries unless I could raise enough for the birds and have enough left for myself. I like a cherry tree on its own roots.

Mr. R. H. Pendergast: The cherry seems to be at home in Duluth. They planted out the common red cherry there, and I have watched them for thirty-five years, and I have never known a year but what the trees had to be propped up to keep the limbs from breaking. I introduced the Richmond up there; it yields heavily, and the fruit is fine. The Ostheim also does well. I have the Wragg, but have not fruited it. Speaking about birds, I tried a simple remedy. I went to the tinshop and procured a lot of small pieces of bright tin. Then I took my stepladder and attached the pieces to the ends of the twigs, and I have had no trouble with the birds since. I left a few trees without the tin, and I got no cherries from those trees.

Mr. J. W. Murray: I have a Richmond set out sixteen years ago, and it is good yet. You speak about scaring birds away with pieces of tin. I never found it successful. I made scare-crows and put them in my trees, but these waxwings, so-called, came when the cherries began to redden and took them all. We shot a lot of the birds and hung them up in the trees, but it did no good. Then we got some mosquito netting and tied it over the tree, but, of course, it would not cover it completely, leaving holes as big as my hand. I stood right by the tree with a club in my hands and the birds would go right into those holes. (Laughter.) I finally concluded if I could not get any fruit the tree would do me no good, and I cut it down. I had the honor of introducing the tin business at Lake Minnetonka. I stretched some twine clear across the vineyard and hung it with tin. It attracted a great deal of attention, and it kept the birds off for two or three years, but finally they got on to it and came in again. (Laughter.)

Mr. Richardson: They told me that tin would keep off the birds, so I went to the tin shop and got a lot of tin and fastened it to the trees, and I always thought the birds came there to see themselves in those tin looking glasses. I know it brought more birds. (Laughter.)

Mr. P. J. Bentz (S. D.): I would like to bring out some facts in regard to cherry growing in the western portion of the state. I had the pleasure of a visit from Mr. C. G. Patten last week. I have a good many cherry trees planted, and he professed surprise at the thrifty condition of the trees of all kinds, and especially the cherry trees. I notice that horticulturists do not generally recommend the planting of cherry trees, yet there are cherries growing in the western section.

Mr. A. D. Barnes (Wis.): I would like to add a little testimony in regard to the hardiness of the Early Richmond cherry tree. I planted ninety-nine Early Richmond cherry trees sixteen years ago last spring, and ninety-two of those are in a thrifty condition at this time. They yielded some cherries the next season of the best quality I ever tasted. I kept a record of the product of those trees, and my books show that I have sold over $1200 worth of cherries from those trees. On my soil and location I have never had any cherry trees that were as good and healthy as the Richmond. I have tried the Ostheim, the Montmorency and all of the Wragg cherries. I think you will make no mistake if you plant the Early Richmond.

Mr. Cook: I had a dozen or fifteen varieties. They wintered all right and blossomed in the spring and set some little cherries. We got the cherry trees to live all right, and they were full of blossoms, but that is all the fruit I got.

Mr. L. R. Moyer: In western Minnesota, where I live, we have two cherries that do well and have produced a good crop. They are the Ostheim and the Pseudo-Hardy. I have never seen the Pseudo-Hardy mentioned, but they seem to be of as good a quality as the Ostheim and as hardy. We have had the Wragg cherry, but it has gone out entirely. They would grow up two or three feet high and then die down after a short time.

Mr. S. A. Alling: I have fruited cherries in Minnesota successfully for forty-seven years with the exception of two years. I have fruited the Early Richmond, and I have tried sixteen other varieties, and I have never gathered a peck from any variety except from the old Homer cherry. I want to set some people right in the matter of the Homer cherry. I think I am the oldest fruit grower in Winona county. Nurserymen are selling what they call the Homer cherry, but the people that are buying are not buying anything new. I have fruited the Homer cherry for forty-seven years. They are the most prolific bearer and the sweetest cherries growing in the northwest. I have shipped trees all over the western and northern states. I have shipped them almost everywhere, and I have had nothing but the most favorable reports. The Homer cherry tree, so-called, is one of the greatest trees ever produced because it does not sunscald. There is another thing about cherry trees in this country. I was raised on a fruit farm at New Haven,

Connecticut. We pruned our trees away up, so that when I was a small boy I could ride under the limbs. I have six orchards aggregating about 2,500 trees, and I let the limbs come out close to the ground, and then never cut off a limb until it is dead. Every single limb in a favorable season will have cherries on. The first sign of decay will be that sunscald. The first indication of decay or of sunscald is a pure white gum that will exude where the limbs come out, and you will see no signs of sunscald except at that place. It means that it has begun to decay, but the tree will mature fruit right along. It will bear when the trunk is almost gone and rotted out in the heart, when it resembles a nail keg with the staves out, yet it will stand there and produce cherries until the last stave is gone. It will bear cherries as long as the body lives. It will grow cherries just as long as there is a green twig on the tree.

If there are any indications of water sprouts cut them off in the roots. I want to make a statement to the people who are putting out cherries. When you see any signs of decay a little above or a little below, select one or two of the best sprouts and let them grow, and when the tree is gone you will have them well started. If you could come with me and go into my yard and let me show you of what I am speaking here, you would have some knowledge of the reason why cherries do well. Cherries will do well, but they must have their limbs close to the ground. I had an orchard of 219 trees from which I picked 200 bushels of cherries. And as to what I said about the limbs, I want to state that 100 bushels were picked by my pickers while standing on the ground. Let the limbs come out low, never higher than three feet. I raise other stuff among my cherry trees. I usually get a crop of grass, but just as sure as I put in a plow and break up the roots I have a world of sprouts coming up, and I want to tell Mr. Wedge that if he cultivates his cherries he will soon not need to buy stock from nurserymen. I think Mr. Brand will tell you that; he has had some experience. I do not get as large orders from nurserymen as I used to. It is not the fault of the fruit or the tree, but because they have learned to propagate it themselves. (Applause.)

The President: I think Mr. Alling has given us a very interesting address on cherries in place of Mr. Widmoyer.

ONION SETS are grown from seed sown so thickly that the bulbs do not have sufficient room, moisture or plant food to attain much size. They ripen prematurely, and if carefully stored in winter and planted out the next spring they will complete their development into large bulbs. Their chief use, however, is for the production of bunching onions early in the spring.

SUB-IRRIGATION IN GARDEN PLOTS.—Water poured on the surface hardens the soil, washes gulleys and blisters the plant leaves, but applied gradually to the roots it all goes where it will do most good. Set a 5-inch unglazed flower pot between the alternate plants, and fill with water to which is added a little nitrate of soda. August-set strawberry plants thus treated will bear well the next season. Celery and lettuce will pay also satisfactorily for the trouble when a dry spell occurs.

HYBRIDS.

O. M. LORD, MINNESOTA CITY.

At the present time we generally understand that a hybrid means the offspring of two species, but some of the older scientists classed the offspring of different varieties as hybrids, also claiming that the only difference was in degree, or in the prominence of dominating characters.

Later writers, however, designate as hybrids only the offspring of distinct species; as for example, a cross between the wild crab apple and our domestic varieties, or the cherry and plum, or the peach and plum. The behavior of these crosses has long been a study in attempts to formulate some general law to govern the character of the progeny of crosses in the cultivation of fruits and flowers. A lively interest in this subject has lately been created by the convention lately held in New York City of scientists representing Germany, France, Austria, England and our own country.

At this meeting considerable time was occupied in the discussion of Mendel's Law, which had been comparatively unnoticed for forty years but is now recognized as a valuable addition to our knowledge of heredity and hybridizing. His experiments extended over a period of eight years with different plants, and though his conclusions have been somewhat criticized the principles he lays down are worthy of our careful consideration if we are seeking to improve our fruits by crossing. Had we been conversant with his methods and results, it would have saved us much effort and groping in the dark along grounds that had been well covered by his work.

It has been said that the union of two buds in budding has sometimes produced a hybrid, but the only practicable method generally known is to place the pollen of one blossom upon the stigma of another, and one of Mendel's principles was that the character of the progeny was wholly dependent upon the constituents of the pollen cells and the egg cells of the mother plant or, in other words, what combinations had entered into the life formations of the cells, heredity playing no part in influence on the progeny.

The application of some of these principles to the production of native plums explains in a measure their remarkable variety in form, color, quality, season, etc., and their variability when produced from the same seed. Domestic apples may also be governed by the same law. The Americana group of plums

naturally cross reciprocally and have done so from the beginning, which produced varieties in endless confusion. No one can predict with any certainty what the progeny will exactly be by the crossing of two varieties. In some cases the pollen cells unite or blend with the egg cells of the pistillate plant, in which case the product is a new creation and may be entirely unlike either parent, and if these pollenize themselves the after progeny will prove constant in character. Another principle: If the plants of both parents have similar dominant characters, the character of the dominants will be perpetuated if the progeny be pollenized by the parent pollen. In some cases the pollen and the egg cells do not blend, but either one may be vivified when brought in contact, and the resulting progeny will be more or less the counterpart of the dominant plant, so much so that only the character of the one parent can be distinguished; but even this progeny may invisibly retain a recessive character and appear like the other parent after several generations, either by accumulating its recessive character or by the application of some other pollen.

Another principle: It is not possible to determine the number of different forms under which the offspring of hybrids appear or to arrange their forms with certainty, according to their generations; but in the first generation bred from hybrids, the dominant character reappears in the proportion of 3 to 1; the recessive characters also reappear in the same numerical ratio, and when fully formed they present no appreciable difference in their subsequent development.

When we attempt to trace the relationship of hybrids by a small number of plants, the results are very uncertain, as the differentiation of characters increase in cubic ratio. For instance: if two different stocks differ in seven characters, and 100 and 200 plants are raised from the seeds of their hybrids to determine the grade of relationship of the offspring, we can easily see how uncertain the decision must become since for seven differentiating characters the combination series contains 16,384 individuals, under 2,187 various forms. Different relationships could assert their predominance as chance presented this or that form to the observer. In applying this law to the production of plums or of apples we can plainly see where so much variation comes in, as it would be rare to attempt to cross two varieties without more or less differential characters in the pollen and egg cells. In crossing two varieties of native plums it is immaterial which one

is used as the pollen or the egg cell plant. The resultant hybrids will be nearly identical in dominant character. This has been shown in crossing Wolf on Rollingstone and the reverse; also the Brittlewood, by Mr. Williams. No. 1 is the product of Quaker pollen on Harrison's Peach, No. 2 the reverse. The only prominent difference in fruit is that one matures about a week later.

The character of the mule form of fruits, or such hybrids as are not fertile, cannot be predicted because we have no means of knowing what combinations have formed the pollen cells or the egg cells of the parent. This is especially true of the outward or visible characters, such as size, form, color, &c. It follows that the cross-bred may resemble one of its pure parents, so as to be practically the same. It may present an intermediate between the two parental forms, or it may be nearer to one or the other in any degree, or it may present some form quite different from either parent, or it may revert in appearance to some former type.

In regard to the primary influence of pollen on the character and appearance of fruit: There are some well authenticated cases of such influence on strawberries, apples and other fruits. No elaborate experiments have been conducted to establish a law or rule by which this has been accomplished. The pollenizing process has been questioned by some and attributed to sport or bud variation. In the crossing of peas by Mendel and others, it has been found that the influence of foreign pollen can be detected immediately after fertilization in the form of the seeds and cotyledons, but other characters remain invisible till the next generation is produced.

From these facts we may see that there may be any number of pure characters associated in one organism, and each character is capable of being dissociated or replaced by its contrary, the resultant being a distinct unit character—unit characters being of such a nature that any one of them is capable of being displaced or of displacing alternative characters, taken singly. These unit characters have been named allelomorphs, or pairs of contraries, and while we know that one may be displaced we do not know that pairs can be displaced by other pairs, these being alternative to each other in the constitution of the germ cells according to a definite system.

Dominance is merely a phenomenon incidental to specific cases, between which no other common property has been perceived. In blended inheritance we have no dominance; in alternative

inheritance we have no universal dominance. Absolute and universal purity in germ cells has not been determined for any case. The impairment may occur from blended or from mosaic properties. Unexplored nature may reveal cases of purity, as we have reason to believe that they may occur in rare cases. There are also groups where these principles do not apply; nor is it easy to conceive any law of ancestral heredity which can express them. The first cross may be irregular or not intermediate between parental types. There is often some degree of sterility.

False hybrids may be produced where we have fertilization without transmission of parental characters. In these cases the first cross may show in some respect the character of one parent only, but in its posterity no appearance of the lost character or characters is observed. The nature of such cases is still quite obscure. To these uncomformable cases further experiment will add many more, as the phenomena of inheritance is more complex. But Mendel's principle may be extended from hybridization to heredity, though the laws of each case must be determined by separate experiment.

THE MINNESOTA STATE HORTICULTURAL SOCIETY.

A. W. SIAS, HARBOR VIEW, FLA.

In the exuberance of his affection for our society, Mr. A. W. Sias, of Harbor View, Fla., life member for thirty years and well known for his practical work in horticulture in our state in the seventies and eighties, gives voice as follows:

The Minnesota State Horticultural Society:
She's mine alma mater.

We ne'er brag about old Harvard or Yale,
Or of any other subject that's stale.
We knocked at her door and received our mail—
She's mine alma mater.

Do we now grow trees as nature revealed?
If so, fine is the fruit, and big the yield!
We joined the ranks, and unto her appealed—
She's mine alma mater.

We'll grow grape fruit as big as good pumpkins,
Without aid from commercial man—Dunkins!
Our college will help, as sure as fate is—
She's mine alma mater.

She's my good, pure, mental food creator!
To the truth, she's no idle spectator.
There's a host to love, and none to hate her!—
She's mine alma mater.

—Sam Bacus.

ANNUAL MEETING, 1904, SO. MINN. HORTICULTURAL SOCIETY.

L. P. HIGHBY, SEC'Y, ALBERT LEA.

The eleventh annual meeting of the So. Minn. Hort. Society was held in the city of Albert Lea, Feb. 25, 1904.

As the president of the society, Mr. O. W. Moore, of Spring Valley, was hindered by sickness from being present, the meeting was called to order by Vice-President P. Clausen, at whose suggestion A. W. Massee, of Albert Lea, was chosen as chairman of the session.

The morning session was spent listening to the reading of the president's address and of committee reports.

The following notes are from the Albert Lea Evening Tribune:

In the afternoon there was a larger attendance than at the morning session, although the stormy weather kept not a few away.

The topic assigned M. E. Giles, "Experiences of the Horticultural Amateur" proved a very interesting one.

The paper by President O. W. Moore, of Spring Valley, upon "Spraying" was read by Secretary Highby. The topic was continued by J. Q. Annis, who told of the effects of the work in Arkansas and other places, his remarks being largely devoted to borers and insects that greatly damage apple and other fruit trees.

There was a vigorous discussion over the matter and many interesting points were brought out, Mr. Annis recommending a wash of soft soap and water. Chris Bertleson said he used hellebore and slaked lime for cleaning currants from insects.

C. G. Patten gave some ideas regarding the various insects that attack fruit and declared the currant worm can be absolutely destroyed by hellebore, and that agent is harmless to people, while Paris green is dangerous.

Mr. Hibbs was called upon to give his experience in spraying, and he said that while he had not at all times met with success the last year, he had the satisfaction of knowing that he had defeated the worms on apple trees.

C. G. Patten, of Charles City, Iowa, read a paper upon "Originating New Varieties." The paper was a literary treat as well as a brilliant and understandable exposition of a highly interesting topic, as it went to the bottom of the raising of seedlings.

Clarence Wedge took up the subject and went into some points more in detail and especially in the selection of the seed to be planted for originating new varieties. Mr. Wedge closed with a hearty endorsement of the Patten's Greening as a profitable fruit to raise.

Peter Clausen urged all present to endeavor to secure the

$1,000 offered by the State Horticultural Society and not let it go to Iowa.

The paper prepared by C. M. Jensen was here read by Secretary Highby, as Mr. Jensen was sick and could not attend. The paper was upon "Good Varieties of Fruit for the Farmers to Grow."

Mr. Friedholm wanted to know how to get the Columbian raspberry to grow up and not fall over, and Mrs. Massee said that it could not be prevented as the Columbian is cultivated from the tips.

Mr. Prescott said he clipped the top when the cane is as high as he desires and let branches come out.

H. F. Hanson said it did not make much difference whether the canes stand up or fall down, as it usually winter-kills and all can be taken out in the spring.

Mr. Wedge defended the Columbian and said it did very well for him, while Mr. Bertleson said he had had good results from them.

"Horticulture for the Farmer's Son," by Clint L. Luce, was here read, and after its reading a motion requesting its publication in the Albert Lea Tribune was carried.

A committee on preserving the big trees in California was named as follows: L. P. H. Highby and Clint L. Luce, the report to be in for the evening meeting.

A committee on nominating of officers was here named, and it consisted of Clarence Wedge, P. Clausen and H. F. Hanson. The committee reported in favor of the following: President, O. W. Moore, Spring Valley; vice-president, J. C. Hawkins, Austin; secretary and treasurer, L. P. H. Highby, Albert Lea. The report was adopted, each candidate being elected separately and by ballot. The meeting was then adjourned until 7:30 p. m.

The evening session of the society was held in the municipal court room of the city hall, and the attendance was not as large as had been expected, but those present were of "the elect" in horticulture.

The first number on the program was a paper upon "Top-grafting" by J. A. Jensen, of Rose Creek, Mower county. He was not present, and the paper was read by Clarence Wedge. It gave the results of experiments in top-grafting that Mr. Jensen had had.

In reply to a question Mr. Patten stated that the stock and graft did not of necessity have to be both sweet or both sour, still the matter is largely experimental.

Mr. Wedge then gave some experiences he had gone through in top-grafting, some of them being very successful and others not so much so. He said he expected to grow all the Jonathan he wanted, the king of fruits, by top-working them upon the Hibernal.

P. Clausen gave the result of his work in top-grafting, especially as regards Malindas.

There were a number of interesting questions propounded and answered regarding different phases of top-grafting.

The next topic was upon floriculture, being a paper by H. C. McMillen upon "Rose Culture." The paper was a plea for a little space for a flower garden, as it beautifies the place and adds interest to life. The paper then gave special treatment for the culture of roses, and Mr. McMillen gave some pleasing experiences he had gone through, in most cases meeting with success.

Mrs. A. W. Massee was called upon and took up the question, and she gave the results of her work with several varieties of roses. There was an extensive discussion over the subject of covering roses in the winter, and the concensus of opinion was that the stems should be kept dry.

The next paper was upon "Perennial Flowers for the Home Grounds" and was presented by Mrs. A. W. Massee, and it was a gem from a literary standpoint as well as for disseminating a vast amount of information upon the topic under discussion. The paper discussed the flowers under the head of bulbs, shrubs and perennial plants proper. There was an interesting discussion over the subject.

The following preamble and resolution was then presented by the committee, and a vote being taken it was unanimously adopted:

Whereas, a movement has been started looking to the preservation of the gigantic trees in California and the use of the surrounding territory for a national park, and being desirous of promoting forestry and park interests, be it

Resolved, by the Southern Minnesota Horticultural Society that it approves and endorses the efforts put forth as above stated and requests that the member of congress from this district and the United States senators from this state do their utmost in securing the proper legislation to complete the project.

A vote of thanks was tendered the city of Albert Lea for the free use of the commodious rooms and also to Mr. Clausen for showing the fruit and beautiful blooming azalea.

There was some discussion about pears, but the fruit was not considered hardy and not altogether advisable to experiment with.

A vote of thanks was tendered Mr. Patten for being present and assisting so much in the program, after which the meeting was adjourned.

MY PLUM ORCHARD.

R. E. HYNSON, MANKATO.

I have made a study of plum orchards for ten years, and I have noticed that wherever an orchard has been set out in a cluster or thicket, as most all of the fruit agents recommend, they come into bearing in four or five years and bear one or two good crops, and after that they begin to crowd each other, and they don't fertilize, or if they do the plums are small and scabby. We had a grove of native plums on the old homestead, of a very delicious plum. We call them the Peach plum; they taste like a peach. We always had orders for more than we could supply. About twenty years ago they bore heavy crops, but after the trees got larger they would

R. E. Hynson, Mankato.

blossom full every year but would produce very little fruit. We had a garden on one side of them, and I noticed the trees next to the cultivated land always had large, perfect fruit, while those inside of the grove were almost worthless. That set me to thinking, "what can I do to make them all perfect?" Some one told me they needed bees to make them fertilize. So I bought a swarm of bees and kept them in the orchard three years, but that was not a success. The plums were too small and badly stung by curculio. So I thought I would look over my apple orchard and see if I could not get an idea from them that would give me light on the plum. I

noticed where the apples were set too close together the apples were small and faulty, deficient in size, color and quality, but where they had plenty of room and sunshine and were cultivated around they were nearly all perfect.

"Well, now," I said to myself, "I have found the secret; I will grub out two-thirds of my trees so I can cultivate through them the same as the apples."

So this last spring I grubbed out enough so I could cultivate with a two-horse cultivator. I cultivated twice while they were in bloom and three times after, and I got the finest crop of plums I ever saw.

Plum orchard in poultry yard—at R. E. Hynson's.

The trees had as many plums as leaves on and of the very best quality. There were not two quarts of poor plums in ten bushels, and I did not spray either. This was on the old plum trees.

I have a new orchard that I set six years ago, and a part five years ago. I set those sixteen feet apart in the row and the rows twenty feet apart. Forty-five are Rockford. Some of these trees bore a bushel of plums to the tree this year, three year old trees set five years ago, and my Peach plums doing equally as well. I got two dollars a bushel for the choicest ones. I cultivated this

orchard also twice while in bloom, and as often as the corn field afterward.

I cultivate when in bloom for two reasons: One is to stir the ground so that the air and earth can make a connection, and that makes electricity, and when you have got that started you have got action in the air, which gives new life power to the buds and blossoms. The second reason is that cultivation produces growth, and there are no leaves to grow, so there must be a growth in the blossoms. Why does growth in the blossoms aid fertilization? Because it enlarges the calyx, or cup, that holds the ovule, or little plum, and by enlarging that it lets the pollen fall down around the ovule, and that does the work of the bee.

Now in regard to spraying: I did not spray my old orchard, but I did spray my young trees twice, not to kill the curculio, for my cultivation seemed to do that, but later in the season to kill the Hession fly. If I had not killed them, they would certainly have killed my plum trees.

WHOLE-ROOT VS. PIECE-ROOT GRAFTS.

A. F. COLLMAN, CORNING, IA.

No class of men have been handicapped and crippled by misrepresentation in business as have the honest horiculturists who are selling honest trees at living prices. He has had to face the kid gloved gent with his tree strawberries, budded apple trees and sweet gooseberries, who probably never budded a tree or even saw one budded; who travels on a borrowed name or firm and buys cheap trees and plants at wholesale to fill his orders and don't care whether the stock is true in name or otherwise, or whether budded or grafted on whole or piece roots.

But the greatest delusion of the present age, in the business world, is the whole-root-grafts. It is not advisable, if it were practicable. It is now an established fact that only ten per cent of all our apple seedlings are hardy enough to stand our severe winters, even as far south as the 40th parallel. It is a Divine command to build on a solid foundation, and we know that this is true in all practical and scientific questions.

The whole root men tell us that the seedling root uncut forms the tap root for the tree to draw the moisture and the nourishment to make the tree long lived and fruitful, when just the opposite is true; roots will go down to moisture then branch off after nitrogenous food for the tree. So we see it is not practicable to graft a short scion on a whole root from fifteen to eighteen

inches long, when only one out of ten south of the fortieth parallel would stand our test winters without protection.

We can always judge the root system by the top of a tree. All light, upright tops never have a good root system and invariably have a long tap root with but few surface feeding roots, and to apply this to a fruit tree we know the same rule will prove true. We would never look for an abundance of good fruit on a light upright-topped tree. Why? Because it has a poor root system; its roots run deep and produce wood instead of fruit. And, on the other hand, a tree that has a good open top always has a good root system that branches out far from the tree, to gather food for the tree to develop its crop of precious fruit. This rule holds true with all nut bearing trees; for if we wish to plant any of our nut bearing trees for fruit we must transplant them, and in doing this we usually cut the tap root to do the work nicely.

So you see, we believe in the piece-root system and would plant no other. We would use a short root about three inches long, and a long scion about six inches long, and set it in the ground down to the top bud and then cultivate thoroughly, and the surface feeding roots will usually start from the scion. Then you will have a tree on its own roots, so that if your scion is hardy and your work is well done you will have a good tree, with a good root system that will stand our hard winters, produce plenty of luscious fruit, reward the planter and laugh at the storm.

SEEDLING CRABS IN NORTH DAKOTA.

(A letter.)

The following letter forwarded to us by Mr. T. A. Hoverstad, superintendent of the Crookston Experiment Station, contains a recital of the efforts of a resident of North Dakota in growing seedling apples. His experience will undoubtedly be profitable to others similarly situated in a locality where it has been found impracticable to grow the standard apple. (Sec'y.)

Mr. Hoverstad, Crookston, Minn.

Dear Sir: I received your letter asking about my success in raising seedling apple trees or apples. I hardly know what you would call success.

When I came to this country I brought with me several hundred seedling crab apple trees of the first year's growth. The seed was taken from large, excellent seedling trees which I had grown at home in Canada.

I was late putting them out and had not much ground ready, so I put them out very close so as to preserve them until another

time when I would give them more room. I moved quite a number and planted them about sixteen feet apart. These with the nursery have successfully and unprotected stood the blizzards for over twenty years. I lost some from other causes than the severe winters.

Apple trees will not be a success in either an alkali bed or a water hole. In my nursery came the "survival of the fittest," some dying out for the want of room, just as you will see it among forest trees that have been self-sown and therefore too thick.

I got some scions from my best seedling crabs in Canada and grafted them on to some of the seedlings which I had here. Thus I had two kinds of seedlings, those which I raised from seedlings in Canada and also seedlings from the trees which I grew here without grafting. The result was that I had quite a number of large, good flavored seedling crabs which are unknown to nurserymen. Some of the largest were three inches in diameter in Canada, but are a size smaller here. I think it is owing to the dryness of the air and soil. Those that I would recommend are from the size of the Transcendent crab up to something less than three inches. One most excellent variety which did well in Canada grew and bore well here, but first I knew it rotted off close to the roots. I think it was owing to the soil. If the soil had been more sandy or gravelly I think it would have been all right.

I had good success with three other kinds, which are known to nurserymen, the Transcendent crab, Queen's Choice and Montreal Beauty.

Last summer there was a very severe thunder storm accompanied by awful lightning. Very shortly after the storm some of the trees looked as though they were struck with the blight. The leaves had changed color and were dead.

And now having given you my apple tree history I will leave you to judge of my success. In conclusion would say that the raising of seedlings in order to obtain new varieties adapted to this country should be encouraged. I believe if the soil is right apple trees can be grown wherever wheat will grow.

Respectfully yours,

Fordyce L. Waldo.

FOREST ADMINISTRATION UNDER THE MORRIS BILL.

(A talk.)

Mrs. W. H. Bramhall, St. Paul: I am very happy to speak before the forestry section of the horticultural society again. When I last spoke to you it was about the use of the non-agricultural lands of the state and of the result we hoped to bring about, and which now in part is being realized in the wise cutting and administration of the forests. You are all doubtless aware of the efforts that have been made in the northern part of the state, and of the opposition to the administering of the

Morris bill, or at least that part of it relating to the forest administration, which comes about because the Indians are being excited. One of the lumbermen is making them believe they are being taken advantage of. The Morris bill provides that five per cent be left for resetting purposes, and the Indians are anxious to know whether they are to be paid for this. The bill provides that 200,000 acres of non-agricultural land shall be set aside for a forest reserve, and the Indians are asking whether they are going to be paid for this. The Indians are almost being persuaded that the lumberman is their friend and the forester their enemy. This is a peculiar situation. Of course, the friends of forestry desire to see the Indians paid. The payment will be provided, but it seems to me the State Forestry Association should put itself on record as asking that that part of the Morris bill be now attended to by our representative in congress, and I hope Mr. Chapman will introduce a resolution asking that justice be done in this matter. (Applause.)

Mr. H. H. Chapman: This bill and the situation which has arisen in the endeavor to administer the law arose from the necessity of passing the law in the way in which it was passed. Our representative at Washington had to pass that bill. The pressure was so strong that they had to compromise on the present form of the law which gave the state a forest reserve with trees enough on it to insure pine springing up from the seed if the Forestry Bureau had charge of the cutting. We got this much. The pine from the tops, the pine after the logs are removed, must be burned at a time when the fire would be the least liable to extend itself, and this provision and the necessity which the lumbermen are under of burning these pine tops and needles, and the consequent expense to the lumbermen, makes them very desirous to defeat the bill and do away with the expense. The expense of the administration of the Forestry Bureau is not one-half as great as the lumbermen try to make it appear, and it can be done with great economy, but owing to the attack which the lumbermen are making upon the bill the administration of the law is being delayed through a technicality which every one of the legislators acknowledge existed at that time, and that is that the Indian Bureau is entitled to five per cent as payment for the land. Really they get more than if the old Nelson law had been carried out, as they would not have been paid this five per cent under the old Nelson law which they are now to receive, but legally they are entitled to it. The lumbermen do not care to have the Indian paid for this, but they want to defeat the entire measure.

Secretary's Corner.

OUR MEMBERSHIP FOR 1904.—The annual membership roll for 1904 at this date, March 16, stands at 1,349, which is 280 ahead of last year at this time. Have *you* sent in the name of a new member this year as yet?

CONDITION OF THE PERKINS' SEEDLINGS.—A letter from Mr. T. E. Perkins, of Red Wing, under date of March 12, says: "I have been out looking over my trees and find them in fine condition, hardly a twig killed." We hope to secure a fine show of fruit from this seedling orchard for display at the St. Louis Exposition in the coming fall months.

CONSTANCE HORTICULTURAL CLUB.—This club has been in existance several years and has renewed its vitality again for the year 1904 with sixteen members. Constance is located a few miles northeast of Anoka. They hold regular meetings every two weeks. The officers elected for the year are as follows: D. G. Williams, president; Robert Swanson, vice-president; John Simonson, secretary; Gust Johnson, treasurer; Sam Severson, librarian.

SHIPMENT TO THE ST. LOUIS EXPOSITION.—The material that is to go into the structure upon which to display Minnesota fruits at the St. Louis Exposition was shipped by itself in a car over the St. Louis road, leaving Minneapolis March 15. The car contained also, in eleven cases, the fruit put up in glass jars which is to be used with this exhibit. It is expected that the car will be in St. Louis by the 19th and if everything goes well the structure will be completed by the 5th of April. The exposition opens the 30th of April, which allows a large margin.

SELECTING STRAWBERRY PLANTS FOR SETTING NEW BEDS.—"Select plants grown on new ground and that have had good cultivation. Do not use old plants, but only those which were grown the previous year. If you select such plants and plant them on good ground and take good care of them, and plant such varieties as Senator Dunlap, Sample, Clyde, Bederwood, Lovett, Warfield and Splendid, you will have a fine crop of berries as I did the last year, 1903, when I raised 11,000 quarts on a little over one acre—and if my plants had a 'pedigree' I did not know it." A. BRACKETT, Excelsior.

PLUM POCKET.—Plum pocket is caused by a fungous disease. The same fungus also causes leaf curl on peaches. This latter form of it has been almost entirely prevented by the following treatment: Spray in the spring—at least two weeks before the buds expand—with a solution of sulphate of copper at the rate of one pound to twenty-five gallons of water; or spray with Bordeaux mixture made of five pounds of lime, five pounds of sulphate of copper and twenty-five gallons of water. In applying this material it is very important to apply it two or three weeks before the buds expand, and do it so thoroughly that every twig and bud and crevice in the twigs shall be wet. Prof. Newton B. Pierce, the most eminent expert along this line, believes that plum pocket can be entirely prevented by this treatment. As this disease is especially troublesome in some parts of Minnesota at this time, I hope that many will try this prevention and report their results to the secretary of the Horticultural Society at an early date. PROF. SAMUEL B. GREEN.

ORCHARD TREES IN RENVILLE COUNTY.—Mr. G. A. Anderson, of Renville, Minn., under date of March 14th, says in regard to his orchard trees: "I have examined trees lately and find the hardy varieties in good condition, such as Duchess, Wealthy, Hibernal, Northwestern Greening, Peerless and many others. Snow and Wolf River appear to be perfectly sound. I find a slight discoloration in tips of some branches on the following: Talman Sweet, Jonathan, Walbridge, Pewaukee and a few others. Have two trees of the Newtown Pippin that passed through last winter in good condition, but now are quite badly discolored in last year's growth."

MEADOW VALE HORTICULTURAL SOCIETY.—This society is located at Elk River, Minn. For 1904 the president is Albert Heath; vice-president, E. Morgan; secretary, F. J. Keasling. Its annual meeting was held on Feb. 29. So far seven members have been reported for this local society for the current year. At that meeting the Compass cherry was very highly spoken of as follows, "An early and immense bearer, perfectly hardy and will grow on any soil the choke cherry will." They report a light apple crop the past year on account of hail storm "but for all that there was a fine showing of fruit at our neighboring fair in September. So far as we can tell no harm has been done the past severe weather."

TREES AND FRUIT IN NORTH DAKOTA.—Under the above title, Prof. C. B. Waldron, horticulturist of the North Dakota State Experiment Station, has just issued a bulletin, No. 59. It goes considerably into detail in the matter of growing and planting trees and varieties of trees for ornament and windbreaks and has something to say also about ornamental shrubs, hedges, etc. It contains also a review of the present status of fruit growing in that state, giving a little space to methods, etc. To those interested in this subject a copy of the bulletin will be instructive reading. A copy can be had for the asking, undoubtedly, by addressing Prof. Waldron at Fargo.

CHERRY TREES IN THE WINONA REGION.—Vice-President C. W. Merritt, of Homer, reports further as to cherries, under date of March 17th: "In regard to blight on cherry leaves in this vicinity I don't think there was an orchard of cherry trees in this locality entirely free from it. Certainly all cherry trees on the high lands were yellow with diseased leaves till late in the fall. One orchard composed of Homer cherry trees entirely, owned by Mr. King (my neighbor), was at one time one-third stripped of leaves but rallied later. On my own grounds Wragg, Dyehouse, Montmorency, Orel, Ostheim, Homer and several other varieties all suffered alike. All are dead, if I except now and then a young tree of the several varieties. Cherry growers report fruit buds of cherry trees nearly all killed by hard winter."

CONDITION OF ORCHARD AT WINNEBAGO CITY, March 9th.—"An examination of forty varieties of apple trees on my own grounds shows that most of them are injured more or less by the severe cold weather during the past winter. My oldest trees are eleven years old, and the injury to them is much greater than for any previous winter since they were planted. There are but few varieties that do not show discoloration of wood of last year's growth. Amoung those are the Duchess, Hibernal, Large Anis, Ostrokoff, Rosa Repka, Sklanka. Among the varieties showing slight discoloration of wood at the tip ends of limbs are Patten's Greening, Wealthy, Peter, Okabena, Peerless, Tetofsky, Whitney No. 20, Malinda, Wolf River and

others. Among varieties injured more severely are Northwestern Greening, Tolman Sweet, Haas, Kaump, McMahon White, and Scott's Winter. Some varieties that showed slight discoloration of new growth of wood on previous winters are severely injured, and the end of the limbs probably killed back several inches. From the examination made by me I am of the opinion that we will need to discard some varieties that we have thought worthy of cultivation and trial." DAVID SECOR.

RED RIVER VALLEY HORTICULTURAL SOCIETY.—Some preliminary work had been done in reference to the organization of a society under the above title, as spoken of heretofore in the Secretary's Corner, but the organization was not perfected until at a meeting held in Crookston, on March 5th. Upon invitation Mr. Wyman Elliot and Secretary Latham were present at this gathering. Both morning and afternoon sessions were held, at the former of which about thirty were present, and at the afternoon the attendance was increased to fifty. A large proportion of these were from the immediate vicinity, but Rev. O. A. Th. Solem was there from Halstad; Ole J. Hagen, from Hendrum; E. A. Cannon from Detroit, and a number from other points. A program, largely of an extemporaneous character, was arranged and filled in the hours very profitably and pleasantly. As a result of the meeting 22 members were secured for the local society. Officers who were elected for the ensuing year are as follows: F. T. Haseltine, Crookston, president; Ole J. Hagen, Hendrum, vice-president; T. A. Hoverstad, Crookston, secretary; E. A. Cannon, Detroit, treasurer. The Red River Valley is a hopeful field for such a society, and from the multitude of horticultural topics of interest to that region a splendid program can be prepared, and the annual meeting of this society ought to be an occasion of bringing together a large gathering.

REPORT OF THE "BIRD COMMITTEE."—A preliminary report has been received from the committee appointed by our society to consider what action should be taken looking towards the preservation of the useful birds of the state. This committee consists of Mrs. J. B. Hudson, Lake City; Prof. F. L. Washburn, State Experiment Station; Mr. S. A. Stockwell, Minneapolis; Mrs. E. M. La Penoitiere, Minneapolis; and Mrs. Ida Thompson, Duluth. They met at St. Paul March 15th in joint session with a committee from the Educational Society. It was decided to prepare a pamphlet to be distributed to all the teachers of the state stating the economic value of the birds of Minnesota. Prof. Lange of St. Paul, Prof. Washburn and Mrs. Hudson were appointed as a committee to attend to this. Personal letters also will be sent to the mayors of cities and chiefs of police of the smaller places to see that protection is given the birds. Mrs. La Penoitiere will arrange with the Federation of Woman's Clubs to give this subject a prominent place on the program of the next annual meeting. The state superintendent of schools, Mr. Olson, will be asked to have special attention called to this subject at the summer schools. If all of these methods that have been decided upon are adopted and worked to good advantage a long step will be taken in informing the children of the state and others who may need this information as to the proper treatment of our native birds. All of the members of the Horticultural Society committee were present except Mrs. Thompson, of Duluth. For the facts in regard to this meeting we are indebted to Mrs. Hudson.

MIDDLE ROW.—Wyman Elliot, J. T. Grimes, W. W. Pendergast, Wm. Somerville, J. S. Harris, Wm. Mackintosh, D. F. Akin.
LOWER ROW.—Prof. W. M. Hays, A. W. Latham, R. H. L. Jewett, Clarence Wedge, S. D. Hillman, J. M. Underwood, H. H. Heins.

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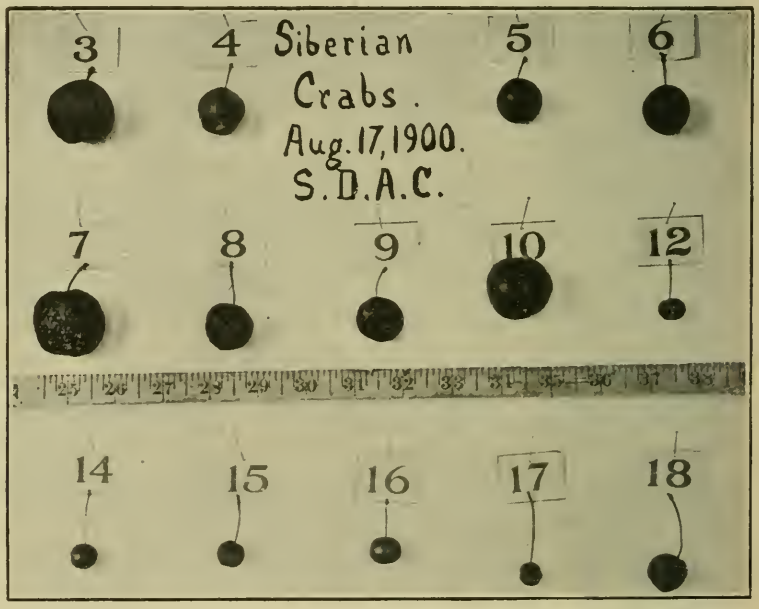
PYRUS BACCATA AS A STOCK FOR THE APPLE IN NURSERY AND ORCHARD.

PROF. N. E. HANSEN, BROOKINGS, S. D.

Judging by the many letters received on the above topic, it must be one of paramount importance. There is more or less root-killing of apple stocks in nursery and orchard every winter in the northwestern states, but it is only in such winters as 1898-9, when the severest cold came in early February with no snow on the ground, that the disaster is so wide spread as to compel general notice to be taken of the situation. The losses of thousands of farmers who suffer from root-killing of unmulched apple trees do not come to our ears, but when a nursery loses twenty-five acres or more of young apple trees we are apt to hear about it at the next horticultural meeting. Some seem to think that this trouble is peculiar to the northwestern prairie states only. On the contrary, the trouble has long existed in Europe, and, what is more, the problem has been solved to their satisfaction. The various phases of the subject can probably be better considered under headings:

1. It has been definitely proven by thousands of experiments that the common apple (Pyrus malus) is not sufficiently hardy to endure the cold of our test winters if the ground happens to be bare at the time. In ordinary winters the root-killing is partial, so that the trees suffer severely in productiveness and general health, finally causing early death. Pyrus malus, our common apple, is a native of the temperate parts of Europe and Asia and has been under cultivation over four thousand years. The form introduced into America by the early settlers is that found in England, Germany, France and other countries of extreme western Europe, where the climate is comparatively mild. In the United States many thousands of seedlings were raised by the early settlers from this race of the apple, giving rise to what

we know as "American apples." These American born varieties gradually supplanted the grafted varieties from western Europe. It cost over one hundred million dollars, at a very low estimate, to determine the fact that these varieties are not hardy enough in the top to endure winters like 1855-56, 1872-73 and 1884-85. This led to the importation of the Russian race of the apple, Pyrus malus being found indigenous over a considerable portion of European Russia. All honor be to Professor Budd for his indefatigable labors in the introduction of this hardy breed. They have certainly made it possible to extend the limit of apple cultivation further northwestward than was formerly possible. The



PYRUS BACCATA.

This figure is from a photo of a lot of *Pyrus baccata* varieties sent me by Prof. C. S. Sargent, director of the Arnold Arboretum. The fruits were raised at the Arboretum. The typical P. bac. is quite small, as you will notice; Cherry and Yellow Siberian crabs are large fruited representatives of the species, which is about as variable as *Prunus Americana*, our native plums.

present recommended fruit list of the Minnesota society gives only four apples as of the first degree of hardiness. Three of these are Russian, and the fourth is an American born seedling of one of these three.

2. According to De Candolle's law, laid down in his noted work "The Evolution of Cultivated Plants," species of trees have not advanced one degree north of their natural limit in historic times. Evidently a period of four or five thousand

years is needed to change a plant so as to enable it to endure a greater degree of cold. This explains why in my plant-breeding operations I insisted on breeding for hardiness and why it is desirable to work with native species whenever possible. The Russian race have hardiness to start with at the far north. In regions where the so-called American apples are hardy, there is no need for them with a few well known exceptions. When visiting Russia in 1894 and 1897 I learned that the Russians had discovered another fact, that the root of their hardiest race of apples was more tender than the top in their provinces where severe cold often comes with the ground bare. They had found that none of their common apple seedlings would endure the test. They had solved the problem by seeking a race of apples much hardier naturally, the pure Siberian crab (Pyrus baccata), which will endure sixty below zero Fahrenheit. The effect of this was to make the apple top bear at least two years earlier and to dwarf the ultimate size of the tree. These trees were all grafted or budded at the collar under the surface of the ground, so that the entire root-system was of the crab and the entire top of the apple.

3. This primitive species of the apple, Pyrus baccata, was long ago introduced into the United States, where it has been largely grown in American orchards, and a numerous brood of hybrids has resulted. This hybrid progeny is now considered by Prof. L. H. Bailey to be the species known as Pyrus prunifolia and is represented by such crabs as Transcendent, Orange, Minnesota, Whitney and others with persistent calyx segments. The pure Pyrus baccata has deciduous calyx segments and is represented in cultivation by the Red Siberian, Yellow Siberian and Cherry crabs.

4. The Russians used Pyrus prunifolia crabs also for stocks. At Moscow they were used interchangeably, but Pyrus baccata was spoken of the most, owing to its great hardiness. The Russians were endeavoring to improve their own apples in hardiness by crossing with Siberians. Some of these I have endeavored to import and to produce more by crossing at Brookings. Such efforts certainly give more promise than to disregard De Candolle's law in selecting the parents with which to begin plant-breeding operations.

5. The practice of piece-root grafting was not in favor with the German and Russian propagators whom I talked with concerning the matter. Their favorite method was to graft and bud at the collar on seedlings already established one season in the

nursery. This gave a strongly branched root system instead of one long tap-root, as is often found in one year orchard apple seedlings. Such trees are not dwarfed in the nursery usually, as I noticed in Russia and have demonstrated since at the Experiment Station at Brookings. Two year old trees budded on Pyrus baccata are one year ahead of the grafted tree, the two year top being fully equal to a three year top of a piece-root grafted tree.

6. One Russian nursery claims there is no material dwarfing of apple trees on Pyrus baccata stock. As Pyrus baccata is somewhat variable, the same as our native plum, in size and quality of tree and size and habit of tree, there is of course some room for experiment on this stock.

7. Lucas, one of the foremost pomologists in Germany, recommends Pyrus baccata as a stock for especially severe situations and states that trees acquire a size intermediate between standard trees and those on dwarf stocks such as Doucin. The fruit is not dwarfed in the least. The effect of more or less imperfect union in grafting or budding is always to cause earlier fruitfulness, the sap being kept back in the top to some extent, changing the wood buds into blossom buds.

8. In Russia the Pyrus baccata was not used for a stock save where it was absolutely necessary, as at Kiev, in southern Russia, where French pears are raised successfully, the apple seed that was handiest to get, either native Russian, French or German, being used.

9. In the prairie northwest nurserymen have long deluded themselves and their customers with the idea of using a long scion on a short root, so that the tree would ultimately get on its own roots. This will do very well far enough south, but there is a considerable area of the northwest where all the scion-roots of the hardiest varieties winter-kill. If nurserymen desire to send into this section trees that will live, they must wholly reform their present method of propagation.

10. In the drier soils as we go northwest in this region, apple trees emit roots with far less rapidity from the scion in the nursery. In dry seasons it is only a myth.

11. Some argue that a seedling from a Vermont apple seed is hardier than a French crab. This is true in a measure, but as we go north the only difference between the two is that the French crab kills "deader," so to speak, than the Vermont apple seedling, but both kill dead enough. The only real difference between the two is that the Vermont apple seedling orchards date back to England most likely, while the French crabs are

imported direct from France. Both are botanically varieties of Pyrus malus.

12. Some say we should raise our nursery seedlings from hardy apple varieties, such as Duchess and Wealthy. This would do for a time as we go northward, but I learned by experience at Brookings in the winter of 1898-9 that no seedlings of the common apple, even Hibernal, Wealthy, Duchess and many more, are sufficiently hardy. The Russians long ago learned to discard all the Pyrus malus species for hardy stocks.

13. Some say, graft apple trees in the usual manner on common apple seedlings, either Vermont seedling or French crab, and mulch the trees every fall. This will do very well for a few trees, but the average farmer will not mulch, and for large orchards it is too expensive. If for some unavoidable reason it is neglected, it may mean the death of the whole orchard after years of work and expense.

14. Some say, plant a cover crop to protect the roots over winter. Very well for some localities, but for a considerable area of the northwest the trees need every ounce of moisture that falls. Furthermore, the season is often too dry, and the cover crop seeds fail to germinate.

15. I apprehend that grafting at the collar, that is, at the surface of the ground or immediately below, will be better in many seasons than budding. At St. Petersburg stocks are grafted at the collar, this giving better results than budding, owing to the shortness of the season.

16. If we were always sure of sufficient snowfall it would solve the problem, as snow is the best mulch in the world. This explains why root-killing is not a factor of consequence in the North Atlantic states or other moist regions with abundant snowfall.

17. Charles G. Patten, of Charles City, Iowa, has given you his experience of some years ago with piece-root grafting on seedlings of the Cherry and Yellow Siberian crab. The experience, as you know, was unfavorable, as already reported to this society in my former paper and in Bulletin No. 65 of the South Dakota Experiment Station. Still earlier experiments, over thirty years ago, in Wisconsin confirmed this same idea that piece-root grafting is not a good plan owing to the inability of the piece-root to keep pace with the scion. Part of this experience may be due to the fact that our root-killing winters only come every few years and in the intervals the common commercial seedlings are very cheap. However, I regard Mr. Pat-

ten's experience as conclusive, and it confirms the advice I heard in Russia against piece-root grafting. In fact, the practice was not favored for ordinary apple seedlings in European nurseries, because they did not get the strong, vigorous growth obtained from trees budded or grafted on stocks already established in nursery.

18. It may be necessary, however, to find some way of doing the work in winter, as this winter work explains why American apple trees are considerably cheaper than they are in Europe with their cheaper labor and high priced land; hence, it may be that whole-root grafts with very short scions may answer fairly well, as I regard it essential that the entire root system should be of the crab.

19. As to whether pure Pyrus baccata or hybrid crabs are best for stocks, it is probably largely a matter of locality. For a considerable district, such as northern Iowa and southern Minnesota, probably either will do. As we go northward the one essential is absolute hardiness, which is found only in the pure Pyrus baccata.

Where shall we get seedlings? There are many old trees of the Yellow Siberian, Red Siberian and Cherry crab scattered about over the northwest. These have been neglected of late years, being superseded by the larger fruited hybrids. Fruit of these neglected trees should be gathered, and the seed saved.

How shall we get a constant supply of the seed? Every nurseryman should have an orchard of these small fruited crabs especially for raising seed. One advantage of an orchard of pure Pyrus baccata would be that there would be less temptation to put the small fruit on the market.

20. Where is the best source of seed in Siberia? The main region seems to be in the Lake Baikal section. The climate there is continental, and crops of grain are raised in places where the ground never fully thaws out, simply thawing enough on the top that the plants will live. The summers are hot, and the severest cold comes in the winter with the ground bare.

21. With a view to solve the question I secured while in Russia in 1897, for the U. S. Department of Agriculture, trees of various varieties of the Pyrus baccata. In the spring of 1898 the buds started before they could be sent out from Washington, and hence the trees were planted on the Department Grounds. In 1901 the ground was needed in midsummer for the construction of a new greenhouse. Buds were taken from them and sent to me at Brookings. These were budded on young

bearing trees of Virginia crab. The work was done in August, and the next year, 1902, they bore and again the past season. This indicates that something can be done by top-working to hasten the fruit bearing of Pyrus baccata in quantity by our nurserymen. The surplus trees of any apple or crab can be top-budded or top-grafted with Pyrus baccata.

22. How shall we raise seedlings? In reply let me give my experience as presented in Bulletin No. 76 of the South Dakota Experiment Station:

"In the effort to raise thousands of apple seedlings at this station the writer has found that some modification of the nursery methods used farther south is necessary for the best results. The pomace from a cider mill is sometimes planted, seeds and all. This method is not recommended, as the fermenting pulp contains an acid injurious to germination. Out of a row ten rods long only three or four seedlings were the result. The experience of others also shows that the germinating capacity of apple seed is greatly injured if it stays in the pomace more than twenty-four hours or until it begins to ferment. The pomace may be put in a barrel and water added. If the mass is now stirred, the seeds will gradually sink to the bottom, and the pulp may be poured off. Where large quantities are desired a long trough with cross-partitions may be used through which the thin liquid pomace flows; the seeds are caught in the pockets between the partitions. With large apples it is found most convenient to cut the fruit in halves crosswise until the core is reached; the halves are then broken apart and the seeds removed with a knife or pointed stick.

"As soon as clean the seeds are spread out to dry for a day or two and are then mixed with moist sand and buried in small boxes, with holes in the bottom for drainage, in a well drained spot in the garden. This is done in the fall before the ground freezes. The box is buried two or three inches below the surface, and if snow comes too early it is removed so that the seeds will be thoroughly frozen during the winter. If the seeds are buried early in the fall the ground should be mulched with straw to prevent drying out. As early in the spring as possible the seeds should be planted. If for any reason the planting is delayed the sand should be stirred every day from the bottom to prevent premature and uneven germination.

"If the seeds are saved during the winter, they may be kept in a dry, cool room until the latter part of February, when they are soaked for twenty-four hours and then spread out on a board to freeze. When thawed out they are put in a box of sand as before. If it is not possible to bury the box it should be put in a frame on the north side of a house and surrounded with sand or coarse manure to prevent drying out by the wind.

"Planting seeds in drills in the open field is not a successful method here. The young seedlings are apt to 'damp off,' or rot, at the surface of the ground, soon after germination and before

the first true leaves are formed. All apple seedlings at this station are now raised in beds four feet wide and ten rods long. The bed is bounded by boards twelve inches wide held on edge by stakes at regular intervals. This makes a bed with a little wall or border one foot in height. The seeds are sown about one inch deep in drills ten inches apart and three or four seeds to the inch. This may be done in early spring, but fall planting is preferred as spring is a busier season, and a few days neglect causes premature sprouting. When planted in the fall the bed is mulched with coarse, well rotten manure to prevent heaving by the frost in winter. This will happen, especially on clay soil. Mulch protects also from winter drought when there is no snow on the ground. This mulch should be removed early in the spring, and if the ground appears baked, which will sometimes happen in spite of the mulch, the surface should be stirred lightly with a garden rake.

"As soon as the young seedlings appear above the ground it is found essential to shade them. This is best done by lath screens. The interval between the laths should be the width of a lath, thus cutting off one-half of the sunlight. The screens are made a little over four feet wide and of length convenient for easy removal when necessary in long rainy spells. As soon as the second pair of true leaves form, and the crust has been broken between the rows with a small hand-weeder, the amount of shade is gradually lessened, common lath fencing being found most convenient for this purpose. The young plants will soon be fully inured to the sun and will make rapid growth with proper care. This means the removal of all weeds and breaking of the crust between the plants as soon as the ground begins to bake after a rain. Some plant seed very thickly in the bed, but this makes the seedlings too small the first year, and a year's growth is lost; on the other hand, if the seed is planted too thinly, too much space is required. In a dry season water is essential at times, but a thorough soaking is then given. The amateur method of sprinkling every day is usually worse than no watering at all, as it causes the surface to bake.

"In the nurseries of Europe it is the common practice to transplant the seedlings the first season, as soon as the first few leaves are formed. The great advantage of this method is the breaking up of the tap root. At this station it is found that a much stronger root-system is developed by this method and, hence, it is desirable, especially where it is intended to use young seedlings as stocks for budding. However, in a dry season it is not advisable, because the root is often quite crooked at the collar, or point of union with the top, and this may easily be strained in digging.

"For handling small lots of choice seed my most recent method is to plant the seed in flats or shallow boxes in the fall. These flats are buried for winter freezing and in the spring are placed in the frames and shaded with lath as already described. To prevent drying out the flats are sunk even with the surface. When the true leaves are well developed the seedlings with ad-

hering earth are taken out in small blocks with a garden trowel and transplanted into seed beds. The seedlings suffer practically no check in the removal, and a strong growth is secured the first year. The earth in the flats should be watered sufficiently just before transplanting so that the earth will adhere to the roots and yet not be soggy.

"In the fall the young seedlings are taken up and heeled-in in the cellar or outdoors. In the latter case they are covered entirely with earth and then mulched with two feet of coarse manure. In the spring they are set in nursery rows, four feet apart, and the seedlings ten inches apart in the row. The first fall it is well to loosen the soil near the collar, then bend the top over and cover with earth to prevent injury from rabbits, field mice and the winter. The seedlings remain in nursery row for about two years, after which the best seedlings, those with large leaves, free from thorns and of strong, vigorous growth, are transplanted to the orchard, or if not too thick they may be left in the nursery row to fruit. The fruiting may be hastened by cutting scions at the end of the first or second year and top-grafting the following spring into bearing trees."

23. In the spring of 1902 some seed of Pyrus baccata from near Irkutsk, in the Lake Baikal region of Siberia, was imported by the South Dakota Station. The seed came too late to soak and freeze in the ordinary manner. Hence I determined to give part of the seed a little artificial Siberian weather by freezing in an ice-cream freezer and thawing out slowly. The method succeeded nicely. I thought this was something new, but learned later that our friend President Wedge had done the same thing that spring on his own account. The remainder of the seed was saved over until the following spring in sand kept nearly dry over summer in a cool cellar and stratified outside over winter. This seed came out very nicely, showing that the seed can be one year old without injury to its germinating capacity. From this Irkutsk seed I raised about 28,000 seedlings. Of this number one thousand have been placed at the disposal of the Minnesota society. The remainder will be sent out at a moderate cost in the hope that many will plant them for the purpose of raising seed.

I have had several opportunities to sell these seedlings for piece-root grafting, owing to the great scarcity this year of ordinary apple seedlings, but as I desired to avoid the usual piece-root grafting they were all heeled-in outdoors and will not be sent out until too late to use for piece-grafting.

Recently I received two letters from G. A. Ivins, of Iowa Falls, Iowa, one of the directors of the Iowa State Horticultural Society and who has had long experience in fruit growing. Mr. Ivins writes:

"Several years ago I received from the department a small package of Pyrus baccata seeds, which I planted and have been since experimenting a little in grafting scions from them upon common seedlings, and grafting the apple on the baccata seedling. I find to-day upon examination that the scions grafted upon the apple seedlings have emitted a good system of roots, which would insure the tree upon its own roots and a sure safeguard against root-killing. The baccata seedlings grow a wonderful root system, and I have never seen the like before. If we had seeds of this crab to grow our seedlings, the apple problem for the northwest would be largely solved. I notice the Baccata ripens its foliage, and the foliage all drops off. This in my judgment is the best evidence of hardiness of fruit trees. I would like to know if the baccata comes into bearing early in its native country, and if the fruit will keep any length of time. I have so far made a good union with every variety I have grafted upon it."

Replying to Mr. Ivins' question: "The Pyrus baccata bears at an early age in its native habitat, but I have not heard of any being good winter keepers. The experience of Mr. Peter M. Gideon indicates that we need not expect winter fruit from this species."

The second letter is as follows: "Replying to yours of recent date would say that in the last three years I have been growing the Pyrus baccata, and I find it of medium growth, and it ripens its wood very early in the fall. With the varieties I have grafted upon it I find the union is good. In digging some of the seedlings this fall, I find they have a very heavy root system branching in all directions from the main root. As to the small Yellow Siberian crab, they have been grown in this county for thirty-five years. Such varieties as Tallman Sweet, Wealthy, Seek-no-further, and others were top-grafted upon them from twenty to thirty years ago, and the trees after bearing fruit all these years are in good condition. They are large and vigorous. I have never seen a tree of this crab, young or old, that was root-damaged in the least by hard winters."

Is this whole question a settled one? By no means. I have tried to state the case fairly. Extended trials will be necessary here in the northwest to settle the question. At the worst it can be no worse than to use the common apple seedlings, which we all know to be a failure. A dead orchard means discouragement for nurserymen as well as orchardists.

Mr. W. L. Taylor: Will a root-graft upon a seedling of our common Pyrus baccata make a perfect union?

Prof. Hansen: All I can say is that the European propagators condemn the practice, but that does not altogether settle the question with me. Some of our Wisconsin delegates could give the early experience in Wisconsin some thirty years ago that piece root-grafts on Pyrus baccata did not do well. I heard

much more objection to piece-root grafts in Europe than I care to present until definite experiments can be made.

The Chairman: We heard a great deal of objection in this country also.

Prof. Hansen: Yes, there is considerable opposition to it here also.

Mr. Higbie: What is the prospect of getting such trees in a commercial way?

Prof. Hansen: Some propagators have already made a beginning. I have been trying to aid in that direction for several years. There are scattering trees of Yellow Siberian about; boys will not disturb the fruit much owing to the small size. The trees begin to bear very early.

Mr. Kellogg (Wis.): For how much can you furnish such trees at present for the purpose of grafting?

Prof. Hansen: I have not grown them in a commercial way. I think such apple trees should not cost more than plum trees, although I think apple buds are surer to take than plum buds. In Germany they are not used to our fifteen cent trees. They pay just as much for apple as they do for pear, cherry or plum trees. I think one curse of American apple culture is the demand for cheap trees regardless of quality. Down in the southern part of the country they are using very small, inferior apple seedlings for piece-root grafting, and such trees on strong soil are often sold from the nursery at two years old. "Cut-backs" are sold as "budded trees." You all know what is done. I need not give family secrets away. (Laughter.)

Mr. Brackett: I should judge it would add double to the cost of trees in grafting and budding that way.

Mr. Kellogg: Three times as much.

Prof. Hansen: How do your apple and plum trees compare in price?

Mr. Kellogg: Apples about one-third the price of plums.

Prof. Hansen: Your statement is right. An apple tree on Pyrus baccata stock should be worth as much as a plum or cherry, because it takes as much trouble to raise such an apple tree as it does a plum tree. But the greatest care should be taken to buy only from reliable men who really have what they claim to offer.

Mr. Elliot: I want to ask Mr. Underwood about that block of year old grafts that were standing above my eyes when I was down there? They would average from four and one-half to six feet, ground-grafted last spring. How much more do you expect those trees to cost than piece root-grafted trees of the same size?

Mr. Roy Underwood: In our experience it depends somewhat upon the varieties. Some varieties will mature quicker and make a stronger tree from the time of grafting. We have a two-year old top on three-year old wood. With varieties that can be topped in that way there is no great danger of winter-killing, and they are certainly cheaper than trees we have to

keep three years; but I would not say they are a third cheaper, because it costs more to graft them. They will not branch out for a year, and the expense of grafting is so materially larger that we would not feel as though we had a cheaper tree by grafting it in that way.

Mr. Elliot: Then you would infer that the increase would not be over one-third?

Mr. Underwood: The average ought not to be if the shrinkage is not too large. The general difference between the apple and the plum is that nurserymen can set out an acre of plums and calculate to get a stand of from 85 to 90 per cent, while you cannot depend upon that amount from the apple, because it is more susceptible to drouth, protracted drouth in summer and extreme conditions in winter.

Prof. Hansen: This apple top may be a little tender in winter?

Mr. Underwood: Yes, unless the variety is extra hardy.

Prof. Hansen: The grafting on anything else than on Siberian roots would be useless. A budded apple tree on French crab or Vermont seedling in New York lasts part of one winter. If you bud or graft on the plum in European fashion it must be on some extra hardy root, and you will not find anything to equal the Siberian crabs. Those Irkutsk crab seedlings I would like to scatter out in small quantities. I cannot experiment on a large scale with this as can the nurserymen. I cannot do the whole thing, and I would like you nurserymen to take up the matter, at least in a small way, and I am glad you are doing so. You must understand, however, that you must be cautious. You know the old method is worthless for the north, so the new method can be no worse than the method used commonly in the severer sections of Russia. In the south, where they raise apricots and French pears, anything will do.

Mr. S. D. Richardson: I would like to ask Prof. Hansen a couple of questions. I would like to know what effect a hard winter would have on the very heavy top that grows on nursery trees in the summer? Would it ripen up sufficiently so it would stand our hard winters? And how would those trees transplant? A nurseryman knows that in a root-pruned tree, if we transplant it, we must cut the tap-root and let it throw out side roots. If you want to transplant a seedling walnut you can cut the tap root with a spade and let it stand a year, and it will transplant readily, but you cannot transplant it well the same season.

Prof. Hansen: In case of the black walnut some nurserymen now run through with a tree digger the first year from seed. The German and French nurserymen transplant apple seedlings much as we would tomato plants from hot bed and cut off the tap root. Our way is the cheaper way, simply dig the seedlings in the fall of the first year, take a bunch and chop tops back on a block, then take a jack knife and prune them off at the root and set them out. Some of the seedlings will be already branched out, and these side roots can be cut back at the time of trans-

planting in the nursery row. In regard to lack of hardiness of the top due to the quick growth from the graft or bud in nursery, I admit that we may have to guard against that. It would probably not hurt such as Duchess or Hibernal even in a severe winter, unless perhaps in case of excessive growth on strong stocks.

Mr. Elliot: Then you would infer that the stock would not ripen up as well on the graft as on a piece root?

Prof. Hansen: That is not the point. Whether you put in a graft or bud, it is barely possible that the young growth in nursery would be so tender they would not mature well especially at the tips.

Mr. Elliot: Would it not ripen up as well with a large root as with a small one?

Pro. Hansen: Well, the force of a large root makes the terminals more tender, the growth being more rapid. Pinching back would help to ripen the wood, this being a common practice in nursery management of buds or grafts.

Mr. Elliot: That would apply to some varieties. Do you think the Hibernal will ripen up with a strong growth?

Prof. Hansen: It has with us so far. The buds ripen well without pinching back. The growing practice of wintering trees in cellar will obviate the difficulty. No trouble will be experienced when the trees are set in orchard. Further experience will answer that question. Some varieties would probably not ripen up. I believe some tips might not ripen up well on account of being forced up too strongly by the roots, but I have raised Duchess and Wealthy in this way, and the shoots ripened very well.

Mr. Roy Underwood: I understood you to say last evening that you considered the Siberian crab, Pyrus baccata, much preferable as a stock for grafting to our hardy apples, even to the Hibernal or our native American apple seedlings. I would like to inquire in what respect you consider it better.

Prof. Hansen: For this reason, that no country has severer conditions than Russia, and they have nothing there that will stand those extreme conditions like the Pyrus baccata. The Russians themselves have given up the attempt to get any hardy stock from any of their common apples. They have been forced to go outside of the natural limits of the species Pyrus malus, our common apple, far into Siberia to get this hardy form. It is the smallest apple in the world, many about as big as your little finger nail. I have raised seedlings by the thousand from common apples, including such hardy sorts as Hibernal, Duchess and Wealthy. They all lack in hardiness for stocks.

Mr. Underwood: Do you mean to say that the Hibernal seedling is not as hardy as the Hibernal tree?

Prof. Hansen: It is not proof against root-killing. The seedlings are blackhearted. I learned that by experience in February, 1899.

Mr. Elliot: Could not the seedling of Hibernal be put in the same line with all other classes of fruit? We all know that

seedlings of many of our varieties are not as hardy as the original tree.

Mr. C. G. Patten (Iowa): I believe that is true even of the Pyrus baccata or any seedlings you may mention; they are not all as hardy as the original tree.

Prof. Hansen: I have never known of a Pyrus baccata seedling winter-killing. I believe in this law of De Candolle. The true Pyrus baccata will never suffer from root-killing in our severest winters.

Mr. C. E. Morrell: Suppose the Wealthy is grafted on the Pyrus baccata, what is the effect on the tree and fruit when it comes to maturity? Has it not a tendency to dwarf it in size?

Prof. Hansen: Not the fruit. The effect of a dwarfing stock is to increase the size of the fruit. In Europe prize apples are grown on potted trees on Paradise stock, the sap being kept back in the top having a tendency to increase the size of the fruit.

Mr. Tuve: Does it do away with the necessity of top-grafting?

Prof. Hansen: You can top-graft afterwards. I had under way an elaborate series of top-grafting experiments on Virginia crab and Hibernal apple, but they were interfered with because the seedling root winter-killed. The Virginia crabs survived having rooted from the scion; the Hibernal scion roots winter-killed.

Mr. Tuve: Would it not do just as well to bud the Wealthy, for instance, on the stem or main branches of the Pyrus baccata instead of on the Hibernal?

Prof. Hansen: I would not advise that, because the union would not be good as the trees attain age. At least that is the general experience with top-grafting on Siberian crabs. The apple top tends to overgrow the crab stem.

The Chairman: I wish, Prof. Hansen, you would answer the question as to whether it would affect the size of the tree.

Prof. Hansen: Yes, the tree would be slightly dwarfed. It makes, say, a three-quarter sized tree; it does not dwarf them in the nursery, but it has a drawfing tendency with age.

Mr. Brackett: You spoke of raising them from seed.

Prof. Hansen: I have had them start in bearing when they were six feet in height.

Mr. Brackett: How many years old?

Prof. Hansen: They were small one year imported seedlings in 1898 and they were bearing last year in spite of twice transplanting.

Mr. Higbie: I would like to know whether it is necessary to stake those young shoots. Is it necessary to tie them?

Prof. Hansen: Yes, in a windy country it is necessary to stake all young shoots from grafts or buds.

Mr. Higbie: That would be a considerable item of expense.

Prof. Hansen: Yes, the same as plums. As I said before, it would not be much cheaper than plums. It may possibly be a trifle cheaper. I think the general experience east is that apples

are budded a trifle cheaper. The plum is more capricious about the time of grafting or budding.

Mr. Wm. Tanner: Have you ever tried the seed of the common wild crab?

Prof. Hansen: Yes, I tried that at Brookings. I grew seedlings from wild crab seed gathered at Des Moines, Iowa, and I had only one left out of some 900 the following spring, and that died later. The general experience is that the wild crab and the tame apple do not make a good union. They are too dissimilar in wood.

Mr. C. G. Patten (Iowa): I would like to make a few remarks upon the subject under discussion. I wish to say first that I believe Prof. Hansen struck the keynote of this whole experiment when he said that in the south you could grow anything, whereas in the northwest it was a matter of experiment. Now I think there should be special emphasis laid upon the points we are talking about. In Dakota, where he is, the conditions are so entirely different that he must and is compelled to have a different stock. Now I cannot agree with the professor's conclusions that all that you need here in Minnesota or in Wisconsin or in a large portion of Iowa is the Pyrus baccata stock. While I am entirely willing to concede that he may be successful in Dakota, yet if he still goes further north he will need more hardiness than is found in the Pyrus baccata.

I have made a statement similar to this before: Some twenty years ago or more I planted a large number of seedlings from this Pyrus baccata, of both the Cherry crab and the small Yellow Siberian crab. I grew about sixty thousand seedlings, and I made the most thorough experiments with apples of sixteen or seventeen varieties root-grafted. That experiment was an entire failure, and it did not take long to ascertain that it was a failure. The first two or three years those trees grew with real vigor. I thought very much of the experiment; I thought it was going to be a success; but the third year in taking them up I found the root was not in proportion to the top. In the fourth year the discrepancy was still greater, and that ratio continued with the age of the tree until the root was so dwarfed that the tree would tip right over.

The professor has come to the conclusion in root-grafting that it is a failure even with the Pyrus baccata, so he must of necessity use budding. For instance, he must of necessity graft or bud above the ground, and my observation leads me to the conclusion, and a positive one too, that he must bud probably eight to sixteen inches above the ground in order to get results, in order that the influence of the scion and the stock, as you see it illustrated here, may work in harmony. If you had seen this previously (indicating) you would probably have seen no difference between the size of the scion and the size of the stock, because the influence of the top balanced the influence of the stock, and that is the thought that I presume will develop from Prof. Hansen's theory of grafting on this Siberian. But if a foot

above the ground is just the place where to work on the Siberian stock, I just throw this out as a word of caution, that it is more than likely that you will see all those trees when they come to the bearing point will be attacked with blight right at this critical point, and so we lose our tree.

Coming back to this subject, we do need a hardier stock, as Prof. Hansen says, for all this cold and northern region. I believe experiments so far have proven that we have just those stocks right here to our hands. Mr. Underwood in his most excellent paper calls attention to the experiments made with the seedlings of the crab, and that, I believe, is just the outline. just the solution for all of this region round about us. The Richland crab, the Minnesota crab, the Whitney No. 20 and the Briar Sweet and all that class of hybrids will furnish us just the seed we need, because they have the proportion of apple placed in them that permits them to work in harmony with them. I have proven, as Mr. Underwood has proven, that the seedling of the Whitney No. 20 and the Briar Sweet is hardier than the common apple we are using, and I have also proven that the growing trees of bearing age are reasonably free from blight and also hardy. They are almost as hardy as any seedling of the Pyrus baccata I have used or grown to fruiting size.

There is another point that was raised by Mr. Smith, and that is with reference to the size. In some of those seedlings I found they held on for some time, but the Perry Russet, Fameuse and several others I tried did not appreciably increase in hardiness of the top of the graft, and my opinion is that it decreased the hardiness of the top because of the great inharmony that existed between the root and the scion. None of those trees have made satisfactory trees either in hardiness or general appearance. It did, as I said before, dwarf them. Some of the seedlings of the Pyrus baccata were more in harmony with the graft I placed upon them, so they held out longer, but they were a failure in the end, and the trees were never perfect trees.

Now this year we have undertaken to save seed from the Duchess, Wealthy, Whitney No. 20 and Briar Sweet, all those hardier kinds, and in the Briar Sweet, and especially in the Whitney No. 20, we found the seeds quite abundant, not as abundant as in the little Siberian though, and they make splendid stock. We have so many of those hybrids scattered all over this region, and if we as nurserymen will be forehanded we will have all these seedlings we need, and that they are of fifty per cent more value than any other seedling we can obtain in this region I have not the least doubt.

As I said before, while I fully appreciate the effort Prof. Hansen is making, and the experiments he is making, yet he himself must know and does know that conditions even where he is are so entirely different from what they are over a very large portion of Minnesota, Iowa and Wisconsin that his experiments must necessarily be of a different nature from ours. His needs are different from ours.

Mr. Elliot: There is one question I want to ask in regard to saving seed. Do you mix it or keep it separate for testing?

Mr. Patten: We have kept the Whitney No. 20 separate mostly from the other kinds.

Mr. Kellogg: Were your seedlings sufficiently large to root-graft piece roots?

Mr. Patten: Yes, in my experiments the seedlings of this Pyrus baccata were sufficiently strong to graft. They were growing on new land under very good cultivation, and they were certainly a fine lot of seedlings, standing from twelve to thirty inches high.

Mr. Kellogg: Your seedlings of Whitney No. 20 was the stronger?

Mr. Patten: Yes, they were the stronger; they were very vigorous, as were also those from the Briar Sweet, and I learned from Mr. Underwood's paper that the Orange crab is the same, just what I would expect from those hybrids. They have those two things in common, vigor and hardiness, and those seedlings will compare favorably, indeed, with the best Pyrus baccata.

Mr. A. Norby (S. D.): I live about 35 miles south of Brookings, where Prof. Hansen is carrying on this experiment, and I see that our conditions must vary quite a little even in that short distance. I believe in that hard winter we did not suffer so much from root-killing as they did in Iowa, and I will tell you what I would advise from a little experience I had. I had a row of Martha crabs, which stood in a grove for twenty-two years—and I might say, by the way, that I grubbed them all out this fall. I got the trees in that grove from Bloomington, Illinois. They had been on cultivated ground until they were large trees. In grubbing those trees this fall I was surprised to find them with such a large amount of big roots. They may have been on Pyrus baccata stock, but I could hardly believe it. The roots seemed to hold out much longer than the tops. They were very large and strong—but it is probably only fair to state that on the north side of them there were some weeds where snow would drift in, while at other places the ground was bare. They were planted very shallow, and it was a surprise to me, after all I had heard, that those roots were as sound as they were when I took them up. I believe we can grow apple roots in South Dakota that will stand as well as they do in central Iowa, better than they have stood in central Iowa for the past three years.

Mr. Philips: I want to give you a little Wisconsin experience in regard to a point Mr. Underwood brought out about crab roots. We did have two or three honest nurserymen, and we have some yet I guess. Father Wilcox, of La Crosse, and Mr. Jewell, of Lake City, were honest men. Mr. Jewell called my attention to this crab; that is where I first saw it. I kept two or three of the trees to remember him by. Mr. Wilcox was almost hooted out of our society because he advised grafting on crab roots. He stuck to it, however, and he came up to our farm one year and brought with him one dozen of as handsome trees

as I ever saw worked on crab roots, Transcendent and Hyslop, of which he had planted the seeds himself. I wanted to get a few more trees, so I asked him if he would furnish me one hundred trees. He said he had trees raised from apple seeds, and he said as long as I thought they were just as good he would sell them to me for $20 a hundred, and he said he would sell me one hundred growing on crab roots for $35. Well, I was hard up, and at that time a difference of $15 was quite an item to me, and I thought the other trees were about as good anyway, so I said I would take the trees raised from apple seed, the seed being saved from cider mill seed. "Now, young man," said Mr. Wilcox, "it will cost me something to convert you, but I am going to let you learn by your own experience. I am going to sell you those apple seed trees, and then I am going to give you a dozen of those root-grafted trees just to convert you. You think you are pretty smart, but you don't know everything yet." Well, I did think I was pretty smart; I thought I knew more than the old man did. I planted that dozen trees—I think it must have been twenty-five years ago—and with one exception, an Utter, with that one exception they are all standing today and bearing fruit. The one hundred apple seed trees have gone to the brush pile long ago. That dozen trees, gentlemen, is sufficient evidence about this crab seed business.

The Chairman: Were those trees grafted on Pyrus baccata or hybrids?

Mr. Philips: On Orange crab and hybrid.

Mr. C. E. Older: I see Prof. Hansen does not advocate piece-root grafting on Pyrus baccata, and Mr. Patten has used piece-root grafts in his experiment.

Mr. O. W. Moore: I am not a nurseryman, but I did a little experimenting for my own benefit more than anything else, and although I cannot give you any results, I will simply tell you what I have done. I bought five hundred hybrid seedlings last spring of Mr. Ivins, of Iowa Falls. I grafted on those five hundred hybrid seedling roots Hibernal and Virginia crabs. I used seven inches of root and seven inches of scion. I grafted them in the winter and put them out this last spring, and they are all growing. I intend to grow them another season when I shall top-work them again to the various kinds of apples I wish to grow upon them, Wealthy or anything else I want to produce in the apple line. I am going to double-work them, and the result of this experiment, of course, will come out later on.

Mr. Frank Yahnke: I have experimented along this line a little, and I find in root-grafting that the scion in the course of three or four years influences the root a good deal, that is, the character of the root, but it does not change the nature. Say, for instance, we graft on Transcendent crab a common apple seedling, and in the course of three or four years its nature will change to Transcendent crab wood; it has different wood, it is hardier than anything else.

Mr. A. F. Collman (Iowa): In 1872 when I moved from Illinois to Iowa I was too busy to do my own grafting, so I bought a number of grafts from my neighbors, and I planted them in new ground, cultivated them thoroughly, and I had a pretty fair stand, and they made a good growth. That was followed by one of our hard winters, and I lost every one of them. The next year I did my own grafting, using a short root and a long scion, and ran them down as deep as possible, and I had no trouble from root-killing. I would not set up my experience against that of some of the men here, but I never knew but what the root of a Duchess tree was hardier and more valuable than some of our common trees that are not hardy. I do not quite believe it; I believe the root of the Duchess stock is better than one of the Maiden Blush or common seedling. I know that seedlings of apple seeds were used to propagate on that were not hardy, because we could not obtain hardy seeds in sufficient quantities to do a commercial business; so I know that the seedlings are more tender than our hardy stocks we should propagate on. I used to think we could not get a good tree unless we had a good root. You may raise a valuable horse and have all his points good from his feet up, but if his feet are poor he is not worth much. It is about that way with our apple trees. But if I were going to raise an orchard just for my own use, regardless of expense, I would plant a quantity of those hardy crab apples and work my scions on them, and I think it would be much better. The trouble is we cannot do that where we grow them for commercial purposes. A man here in Minnesota cannot compete with Missouri propagators who will sell you apple trees not on hardy stocks. When you buy apple trees from those traveling men you generally get that kind of trees, and that is why you do not succeed. You are doing a fine work here, and I appreciate what Prof. Hansen is doing and what Mr. Patten is doing. I believe you are on the right road. I would not plant the trees that men from other states wish to sell you and pretend to say that they are hardy stock. Get your trees right at home from stock that you know is hardy, and you will find that in the end they are the cheapest trees you can buy.

Mr. Kellogg: Forty years ago Mr. Barber, of Milwaukee, did a good deal of this crab root-grafting, and in the nursery row they found it dwarfed the tree a good deal, and they went back to the old system. I believe in this hybrid root, and the more you can grow of them the better. I know it is difficult to get the seed. I have thought the Vermont seed was better than any we could get, but I do not know that it is better than the French seed. I have been using it a good deal, but I really could not tell which is the best. We used 75,000 trees; five years ago this winter, following that drouth, everything was killed; Pyrus baccata and everything else was killed in our nursery. We had no Pyrus baccata stock left; I do not know that we had any stock but what was entirely killed out that winter. It was dry root freezing. By this system of propagation of Pyrus baccata stock

by transplanting the seedlings one year and carrying them over, I do not believe you can get a tree so that it will survive such winters. The seedling is a small seedling, as I understand it. I had at one time fifty varieties top-worked on one tree, but it killed the tree. I had thirty-six varieties, but it finished the tree; it did not dwarf the tree, but it killed it. We can grow these Pyrus baccata roots and adapt them to the nursery.

Mr. Elliot: Do you think there is any value in these hybrid roots in a practical way?

Mr. Kellogg: Yes.

Mr. Elliot: If customers will pay for them we can furnish them trees on crab roots?

Mr. Kellogg: Yes, if they are willing to pay for them they can be furnished.

Prof. Hansen: I think the nurserymen have been falling over themselves to make stock too cheap, and in this strenuous competition they have adopted inferior methods. I think that is the reason why so much contempt is expressed in Europe for piece-root grafting. But Mr. Patten's experiment was not a test of the proposed method. I insisted all the time that piece-root grafting on the stock is no test of the matter whatever.

The Chairman: Having any start, would you consider it a fair test?

Prof. Hansen: I would not, because the Siberian crab, the short piece, has no chance to dominate the top, so it is neither one or the other. I believe Mr. Patten's idea of using hybrid crab seeds is all right, as all the trees I saw propagated at the Agricultural College at Moscow on hybrid crabs (Pyrus prunifolia) as well as on Pyrus baccata were all right. Dr. Schroeder showed me nursery trees there that were fine looking, that were grafted right at the collar at the surface of the ground. I believe you should keep the crab root strictly below the surface, but Mr. Patten's plan should certainly be tested.

Mr. Patten: Was not my experiment a fair test as to piece-root grafting on the crab root?

Prof. Hansen: I consider it so, a fair and square test, and in connection with the European opinions regarding piece-root grafting I consider it conclusive. But I maintain, however, that Mr. Patten's failure with piece-root grafting is not a test of the Russian method, in which the entire root-system is Siberian crab and the entire part of the tree above ground is of the cultivated apple. In this way the crab root can better control the size of the top.

In visiting Mr. Norby's orchard the past summer I saw the Martha crab trees referred to; they were certainly large, vigorous trees but just as unproductive as the Martha crab trees in the Station orchard at Brookings. In both places the foliage of this variety was badly scabbed; the season, however, was exceptionally wet and very favorable to leaf troubles of all kinds.

In the winter of 1898-9 the scion roots of the Virginia crab proved hardy in the Station orchard at Brookings. Both Martha

and Virginia are hybrid crabs of the Pyrus prunifolia; the Martha in its calyx segments indicates a larger percentage of the P. baccata than of the P. malus. And as in other hybrids, either plants or animals, partial or entire sterility must be expected in some cases; a mule is an infertile animal hybrid; the Compass cherry is a fertile plant hybrid. But the productiveness of the pure species Pyrus baccata is certainly not doubted.

In studying South Dakota conditions it should be remembered that part of the state is considerably south of the Minnesota line.

The Chairman: Mr. Norby made the statement that there was as much root-killing in southern Iowa as there was in Dakota or even more so.

Prof. Hansen: Yes, wherever there was no snow on the ground. It came in spots. Wherever the ground was bare the first week in February, 1899, they went out, even as far south as the middle of Missouri; even the common apple went out far eastward.

Mr. Tiegland: Did that root-killing take place where the ground was properly mulched?

Prof. Hansen: Who would mulch fifteen acres of apple trees? I know a Dakota nursery where considerable weeds grew in one corner of a block of apple trees; the weedy part escaped, those cultivated clean all root-killed. There were just enough weeds to catch the snow, and it prevented root-killing.

Mr. Tiegland: I had reference to bearing orchard trees.

Prof. Hansen: I maintained in previous talks before this society that as we must bridge over this intervening period we must mulch. But the average farmer will not mulch his trees.

Mr. S. D. Richardson: The average farmer mulches his trees with grass and weeds.

Prof. Hansen: In regard to the age of trees that die out on this stock, I saw apple trees at Uralsk, in extreme eastern European Russia, on the edge of Siberia, said to be twenty years old, on Pyrus baccata stock. The trees were not especially dwarfed. They were irrigated, there being only a trifle over twelve inches rainfall, and the mercury sometimes freezes in the winter.

I believe the statement was made by some one that a large part of Iowa and Minnesota did not need any hardy apple stocks since we have our snowfall and can mulch, but it is going to take an immense number of apple trees to supply the Canadian prairie northwest, Minnesota, the Dakotas and eastern Montana, and you should not supply the demand with anything that is not perfectly hardy. If you as nurserymen keep the trees near home they may be all right, but how about the trees you are going to sell in this vast region northwestward? So far as the hardiness of Pyrus baccata in the northwest is concerned, it has been tried at the Experiment Stations in Assinaboia and Manitoba, and I know it is perfectly hardy there. I have never heard of any winter-killing of this root. I have advocated this small fruited crab for the reason that you will not be tempted to sell them,

and you will have your own stocks to work on and thus get good trees. This stock is used in Germany and Russia in severe locations, but not where it is unnecessary.

Mr. A. F. Collman (Iowa): I have lately had several orders from Dakota, that great wheat country this side of the North Pole, for fruit trees, and I would not recommend any varieties because I did not know their conditions of soil and climate, but I referred them all to Prof. Hansen. (Applause.)

THINNING FRUIT.

Question: What is the best way to thin fruit?

Prof. Hansen: Apples should be thinned when about half the size of plums. To pick them off is about the only way I know how to do it.

Mr. Wilfert: I would like to ask whether any one has ever tried spraying with salt water? I have seen that method recommended. They claim that it will kill the blossoms to a certain extent.

The Chairman: Prof. Beach has done work of that nature, but it is not successful in certain cases.

Mr. Busse: The cheapest and best thinner of fruit is a northwest or west wind. That will thin it thoroughly well.

Mr. Philips: A year ago last summer I was at Mr. Wedge's place when he was thinning his fruit, and he was thinning it by shaking the trees, but I noticed the best apples fell and the small ones remained on the tree.

The Chairman: I had the pleasure of going through the orchards at Benton Harbor, Michigan, last summer, where they make a practice of thinning out to five inches apart, so that when they get through you would say they have taken every peach on the tree. The ground is simply covered with green fruit. But when their crop is matured they get so much better and larger fruit that the thinning process pays them very well. They get fully as much or more in bushels, and on account of the larger size the fruit is worth considerably more.

Mr. Kellogg: At what size do they do the thinning?

The Chairman: When the fruit is about an inch in diameter.

Mr. Elliot: About this thinning process. I will say briefly that in an orchard of 300,000 peach trees, in a section of country where labor is cheap, they go over that orchard systematically when the peaches are about the size of a robin's egg, and they thin them out so they stand from four to six inches apart, claiming they get enough more in size and quality and price to make up for all the trouble. To illustrate: Young Mr. Hale, whose father owns the orchard I have just spoken of, while engaged with his help in thinning peaches, was visited by an old peach man, a man who had raised peaches all his life and thought he knew all about the business, who said to the young man when he saw him thinning out those peaches, "Young man, if you were ruining my peach trees like you are

ruining your father's I would turn you off the place." Mr. Hale did not say anything, but when they were picking the peaches the same man came that way again and went over the orchard looking this way and that and admiring the fine fruit crop. Finally he came into the packing house and said, "Young man, you know your business: I would not turn you off now. You have the finest crop of peaches I have ever seen grown."

Mr. Murray: I think one suggestion that was made should not be allowed to go out as the sentiment of this society. It was suggested that the trees be sprayed with Bordeaux mixture in order to kill some of the blossoms. That is very objectionable for the reason that it injures the pollination of the fruit and poisons the honey, and it would be a great deal more of a damage than it would be a benefit.

The Chairman: I said that Prof. Beach had experimented with Bordeaux mixture in the thinning of fruit. He does not recommend it except in certain cases. I attended the meeting of the American Pomological Society, and the professor brought up that point that it would prevent the pollination of the blossoms. Salt water would be better to use, and it is more easily prepared.

Mr. R. H. Pendergast: Has any one tried thinning the blossoms?

The Chairman: I do not think any one has tried that.

Mr. Pendergast: I found on small trees a horsewhip was a good thing to thin out fruit.

Mr. Richardson: That is too early; we don't know whether we are going to get anything or not.

BEST NEW STRAWBERRIES.

Question: "What are the best and most promising new strawberriers?"

The Chairman: I believe Mr. Kellogg is about the best posted man on strawberries, and I will ask him to answer that question.

Mr. Geo. J. Kellogg (Wis.): Dunlap, Dornan and Midnight. We must discriminate somewhat in planting the Dunlap. In planting it do not let it run more than eighteen inches. Cut off the runners so it does not run more than eighteen inches, and you will get good fruit. If you want the biggest three strawberries plant the Oom Paul, Commander and Velvet. Those have a record of six to the quart.

Mr. Busse: What variety gives the largest quantity to the acre?

Mr. Kellogg: The Dunlap, if restricted, will give more bushels to the acre than anything else. Of the old varieties the Bederwood and Warfield, if I could have but two, and then I would want two more; I want the Enhance and Splendid, and then I want the Lovett, and then I want forty or fifty more. (Laughter.)

CHOP TALK NO. 2.

WYMAN ELLIOT, MINNEAPOLIS.

I have selected a few rambling thoughts for your consideration. The question is often asked what is the prospect of fruit raising in Minnesota. There is not the least doubt we shall become extensive producers of fine commercial varieties. The "doubting Thomases" are growing fewer and fewer each year, and where only a short time ago apple trees were planted by the dozen now it is not uncommon for thousands to be planted with faith. If varieties are judiciously chosen they will live and produce fruit abundantly. As the saying is, "here is the rub," to choose just the right kinds. Purchasing should be given the greatest care that we may obtain those adapted to soil and environment; new and untried varieties should be used sparingly, just a few for experiment, selecting the largest number from those kinds most productive and having the greatest commercial value. Of course the grower must consider hardiness, for a tree that does not possess this qualification is of little value in this rigorous climate. Next is productiveness, the greatest desideratum. We must aim to select those kinds that possess the greatest number of desirable qualities for our particular location. Some varieties have a greater range of adaptibility than others, hence it is necessary to exercise care in selecting varieties for each locality. There is considerable truth in the saying "The man who is fit will do well in horticulture, the unfit one will be a failure anywhere." Not every person who engages in growing fruits for a livelihood will meet success here or anywhere, be the natural conditions ever so favorable. Any horticulturist who expects to grow, harvest and market his products with haphazard, accidental, easy, "don't care" methods may expect to be always complaining of loss of crops, low and unsatisfactory prices, and all his business ventures failures from start to finish. Much depends on the ability, tact and energy displayed in planning every minute detail of the work. The greatest success comes only to those willing to concentrate mind and give energetic, painstaking effort to accomplishing the desired results.

Self-sterility in Apples. C. B. S., U. S. Dept. of Agri., in Orange Judd Farmer, Vol. 39, No. 20, page 428. I call your attention to this article as it has a direct bearing upon the discovered mistake of planting a large block of one variety of apples. According to this statement apples, plums and other fruits, many kinds of them, are self-sterile, and those varieties which are self-

pollinated are not so large or vigorous as the fruits from cross-fertilized blossoms on the same tree; besides, a much larger proportion of the self-fertilized fruits drop before they reach the size of a hazel nut. With many varieties not more than one blossom in a hundred sets fruit when self-fertilized. Out of forty-two self-sterile varieties (the Wealthy one of these) and nineteen other varieties capable of producing some fruit when standing alone, scarcely a good crop was secured, and in nearly every instance the fruit was smaller and less desirable than cross-pollinated fruit. The conclusion seems inevitable that large blocks of a single variety of apple should never be planted. The varieties placed together should be such as will blossom about the same time and capable of cross-fertilizing each other. Strong rather than weak pollen bearers should be planted together in commercial orchards, and since varieties behave differently toward each other in different sections of the country great care should be exercised in choosing varieties for cross-pollination.

Fruit Color. I saw at the American Pomological Society meeting, in Boston, some very fine, highly colored named and seedling apples from Canada that have given me food for thought along the line of how are we to develop seedlings of high color, thus adding to the commercial value of our fruit products. Not every one can be expected to grow fruit of highest color on account of their peculiar soil, but no doubt they can in a measure modify their soil conditions by the use of proper mineral and vegetable fertilizers. We have large areas of natural fruit soils which if properly utilized will produce fruit of the finest texture, quality and color. I have here a sample of the Wealthy and Ben Davis apple grown on what was once timber land, on a steep hillside, a clay loamy soil underlaid with a stiff yellow clay mixed with sand, gravel and stones. Apples grown from trees planted on this hillside are invariably of the finest quality and command the top of the market on account of their high color. I believe fruit grown on a clay soil of this kind will keep much longer than when grown on a thinner, sandy soil. In saying this, I do not by any means wish to discourage the planting of fruit trees even if one has not the very best of soils; by all means plant trees and seeds, and by giving good care and cultivation you will be rewarded with fruit having remunerative, if not the highest, commercial value.

Thinning of Fruits. At the state fair there were exhibited three branches of seedling apples very heavily loaded with small sized fruit, and samples from the same tree taken from limbs not

so overloaded that were double in size of fruit. Undoubtedly if the heavily loaded branches had been properly thinned, the size of the fruit would have been much enlarged, nearly if not quite doubling its commercial value. The process of thinning the fruit on heavily loaded apple and plum trees should be given more attention by most growers. I saw recently a statement that by properly thinning one acre it produced $171.00 worth more fruit than if this had not been done. Thinning and spraying pays, and the quicker we all learn this the sooner we shall have better success in fruit growing.

The Malinda Apple. Since the T. E. Perkins' seedling apples have been brought so prominently to our notice the question of parentage on the mother side (the Malinda apple tree) has been to me of considerable interest. A number of these seedlings in size, shape, texture and quality of fruit, growth habit and leaves of the tree indicate largely from whence they originated, the Malinda type. I began investigating the origin of the Malinda apple hoping I might trace its parentage and if possible discover from whence its inherent prepotency was derived. The Malinda apple is first mentioned in our reports, Volume 1873, page 14, in a letter from Irwin W. Rollins, dated Elgin, Minn., Feb. 12, 1856. Those who have access to that volume of our reports will find this letter very interesting and instructive. I have recently received a letter from John Q. Richardson, of Elgin, Minn., in answer to a letter of inquiry about the true origin of the Malinda apple, in which he says, "I was born within a mile of where the Malinda apple originated, raised by Labon Rollins, of Topsham, Orange Co., Vt. His son, Irwin W., brought the scions to Elgin, Minn., and grafted them here. I have no knowledge of the seed, nor the age at which the original tree bore. That was probably about sixty or seventy years ago, and I am only seventy-five years. The tree bears young and full. I have over 100 set in an orchard; ten or more are bearing. It is the best variety I have both for hardiness and long keeping. A perfect Malinda will keep in a cool cellar till July 4th. The period from 1856 to 1903 shows it to have been cultivated in Minnesota over forty-seven years." Unless some new facts can be discovered, any further research for the history and parental origin of the Malinda apple will be useless.

Score Cards. In the judging of fruits at our last state fair, especially plums and seedling apples, we found considerable difference of opinion as to the real points of excellence. At the American Pomological Society meeting recently held in Boston

Prof. W. A. Waugh, of Mass. Agri. College, talked about judging fruits. He said, "Our next pomological advance must be in the line of systematic study of varieties. On the judging of fruit very little has been said by any one. It belongs in reality, however, to the systematic study of varieties. At the present time no very elaborate system of judging fruits has been proposed." Mass. State Board of Agri. has a score card as follows: To quality 20 points, form 15 points, color 15, size 10, uniformity in size 20, freedom from imperfections 20, making 100 points. The Ontario Fruit Growers' Association has one for apples and pears which gives to form 10, size 10, color 10, freedom from blemish 20, uniformity 20, quality 30, total 100. The card for grapes is, flavor 30 points, form of bush 10, size of berry 15, color 10, firmness 5, bloom 5, freedom from blemish 2, total 100. The score card Prof. Waugh uses in the class room and when judging fruit away from home is as follows: Score card for apples, form 15, size 10, color 20, uniformity 20, quality 15, freedom from blemishes 20. Score card for strawberries is, character and rootage 5, stock and foliage 5, vitality (drouth proof) 7, plant maker 10, healthfulness (rust proof) 5, blossoms 5, productiveness 25, size 10, shape 5, color 5, flavor 8, firmness (shipping quality) 10. In the card for strawberries 38 points are given to the fruit, the remaining 62 being divided between the qualities of the plant itself, suggesting that a perfect system of scoring would require even greater elaboration than has at present been used. Judging fruits upon the exhibition table by their external and internal appearance is very different from forming an opinion when the tree or plant and fruit are to be considered collectively; not only form, color, size and quality but growth, hardiness and productiveness are very important factors in arriving at a just decision of their real merits.

A Horticultural Home. It has occurred to me that a state society with a membership as large as ours should formulate some measure whereby we could secure a permanent home adequate to the needs of forwarding our work in the best manner possible. That we accomplish so much with our cramped quarters is most remarkable. What might we expect if we had enlarged facilities equal to the demands of our horticultural work. It has been suggested that there could be no better opportunity offered some wealthy person or persons of a philanthropic turn of mind than to provide such a home for our society, with ample room for office, library and reading room where horticultural and agricultural papers, bulletins and magazines

could be read by all desiring information of this character. There should also be a room for the display of the fruits of the garden and orchard, with pictures of trees, shrubs and flowers, all giving object lessons to visitors that came within its walls. Think of this and let us all work that this may be accomplished.

Seed Planting. The slogan of every one interested in soil culture should be where soil conditions are at all favorable, "plant fruit trees and seeds." Yes, plant seeds and care for them with a mother's fostering care, and you will be rewarded for your effort. In selecting seed to plant if possible choose from long-keeping, high colored, good quality varieties. Come in close touch with the Minnesota State Horticultural Society by becoming an annual member or, better still, a life member and get acquainted with the modes and methods of up-to-date fruit growing.

Mr. A. D. Barnes (Wis.): I wish to thoroughly commend that portion of my friend Elliot's paper wherein he puts forth a plea for a horticultural home. It would be a splendid thing for any state to have such a home, where its fruit might be exhibited and where it might have a permanent abiding place, and I trust you may carry the idea into execution. I also wish to commend that part of his paper wherein he advocates the planting of more apple seeds. I believe through the planting of apple seeds we are going to reach the heights of apple culture in the near future.

Mr. C. M. Loring: I was very glad to hear the suggestion made by Mr. Elliot of securing a home for this horticultural society. When a boy I used to attend the meetings of the Massachusetts Horticultural society, and at that time its founder, Marshall P. Wilder, was to me a demi-god. It seemed to me as I went through the hall and saw the fruits of the work of that man who first organized that society and commenced the work the result of which we are now seeing and enjoying, it seemed to me something enormous. Every Saturday in that beautiful home they have an exhibition of fruits and flowers, and it seems to me that this great state of Minnesota ought to be able to provide a home for the State Horticultural Society, the largest society of the kind in the world, and I feel under obligations to Mr. Elliot for the suggestion he has made, and I sincerely hope and trust a determined effort will be made towards carrying it out. (Applause.)

The most prolific cause of poorly colored apples on the lower branches is found to be due to one limb overlapping another. It is more important to thin out the branches from the lower than from the upper parts of the tree; indeed, in this climate, there is danger of doing too much pruning in the tops of the trees.

WISCONSIN SEEDLING APPLES AND THE GOOD THEY ARE DOING US.

A. D. BARNES, WAUPACA, WIS.

The value of our seedling apples, so far as dollars and cents are concerned, is beyond the power of man to estimate, but their good can be appreciated if not approximated. Suffice it to say, that our seedlings have for the past ten or fifteen years been our encouragement and the apple producing trees. Of all our achievements and of the laurels won at all the national exhibitions, including the New Orleans Exposition, Paris Exposition, World's Fair at Chicago, Trans-Mississippi Exposition at Omaha, and the Pan-American at Buffalo—our Wisconsin and Minnesota seedlings have been the most prominent features in our whole apple exhibit, thereby proving their predominance over our old and standard sorts.

There is not one single orchardist in Wisconsin or Minnesota who does not point with pride to his Wealthy, Wolf River, McMahon and Northwestern Greening, together with other and numerous lately named seedling sorts. I will venture this assertion that had it not been for the four above named sorts that our apples would not have had any attention paid them at the national shows, to say nothing of not winning prizes and fame.

I feel safe in saying that the past five consecutive crops of apples in Wisconsin were over two-thirds of them of Wisconsin and Minnesota origin; and in my own case in central northern Wisconsin, in my four past crops, ranging from 600 to 5,000 bushels each year, more than seven-tenths of my apples were from this type of trees.

Central Wisconsin abounds in thousands of choice seedlings, the most of them unfortunately of fall and summer sorts and as yet unknown to the general public. I counted in a drive of about forty miles, one week ago today, fifty-one seedling apple trees, all of them grown up voluntarily and unaided in and by the roadside, some of which had apples hanging on them at that date, showing conclusively that they are winter sorts.

This, of course, will appear somewhat like a fish story to your Minnesota prairie friends, so I will inform you that this particular drive was through a sandy, timbered section, where no stock are or have been allowed to pasture in the highways for a great many years, and from one-half to two-thirds of the country is improved with many small orchards. Some of them are old seedlings of from thirty to fifty years of age. Now here let me make

this statement, which I believe to be true: that there are more seedling apple trees of note growing in Waupaca county than in any other county in our central western states; for which, this the reason:

Many of our early settlers were foreign people, with frugal means, yet possessed of a love for and a desire to have apples. Their means not permitting them to procure named sorts or nursery trees, they resorted to the cheaper method of procuring good

A WISCONSIN SEEDLING APPLE TREE.
The largest Apple Tree in Waupaca County. Height 29 feet. Diameter, 43 feet. Age, 46 years.

apples and planting their seeds, which in our sandy, rough and stony timbered soils have done remarkably well, and they have been stimulus or incentives to better efforts and the propagation of the best ones amongst this multitude of seedlings.

Can one estimate the good these seedlings have done for the poor emigrants who planted them? Within three miles from where I am writing this article stands an old veteran seedling

apple tree that is more than fifty years old—and it is in fairly good condition yet—that in one season bore more than forty bushels of good apples, and I figure that it has produced in all more than 500 bushels of apples. Who can estimate its value? I believe that one-fourth of the apples grown in Wisconsin for the past three or four years have been Wealthys—God bless Peter Gideon! Who can estimate the value and good they have done?

My mother planted apple seeds in Dodge county almost sixty years ago, from which my father, before I was born, selected and planted an orchard of about 100 trees, one of which is alive and thrifty yet. These trees have borne thousands of bushels of apples.

My people were then poor and could not afford to buy trees, but we had apples—God bless their efforts, too! My mother still lives, and is it not a pride for her to point to the old seedling apple trees?

Legions of new and promising seedlings have often appeared on our docket, and we are all in a friendly strife seeking to win fame for our new Red Jacket, Yahnke or Sweet Famuese—and your pledge of $1,000.

The good done by this offer you have made is immeasurable. Some one will get the money, but the public will get millions in wealth out of the benefits of these competing sorts, for all of them will do good in their vicinity.

It is not my purport to laud the praises of any new sort, but I do want to encourage the production of many more new varieties, believing that they will be of great local if not national benefit.

A study of these new seedlings before us at this meeting, and on this off year, ought to convince the most skeptical and encourage the most dormant person on earth to bestir himself to plant seeds and propagate these new sorts.

Could we write epitaphs and eulogies over the tombs of our illustrious departed ones—Gideon, Peffer, Plumb, Springer, Harris and many others, what more befitting could we say than—"They selected well the seed they planted."

I want you, our sister state, to join us in locating and maintaining a seedling apple orchard for the purpose of planting seeds, propagating and disseminating seedling apples. Will you do it? And our efforts shall be rewarded.

Surely it is a blessing and should be an inspiration to see multitudes of stray seedling apple trees growing by the roadside,

floating their dark green foliage, and nodding their rosy cheeked apples as we pass by, inviting us, as it were, to aid, foster and care for them. Surely we should all take encouragement and do our part, and who can tell their benefits?

Mr. J. S. Parks: I think most of those seedlings came from later plantings. The first came from seeds Mr. Springer and I brought from the east. I think that is the origin of most of the northern grown apples; they were brought in at that time. They certainly have a good record to turn back to, because I was down there within two years, and I visited the same locality where Mr. Springer secured his seed in northern New York, and I found the trees were growing still from which he had secured the seeds in 1852. The trees are hardy and are still bearing good crops. I reiterate that those trees were propagated from the seeds obtained from that orchard. I think that accounts a good deal for the good quality of fruit that originated in Waupaca county, Wisconsin.

Mr. Philips: Do you claim the Wolf River grew from the seed you obtained in Michigan?

Mr. Parks: I am not sure.

Mr. Barnes: Were you in the county at the time you procured those seeds from Michigan?

Mr. Parks: Yes, I was.

Mr. Barnes: I think that justifies the claim.

Mr. Philips: I have been asked to give a history of the Wolf River and to state positively about the origin of the seed. What I want to know is whether Mr. Parks is sure that the Wolf River seed came from Michigan or whether it came from New York.

Mr. Parks: Mr. Springer always maintained it came from the seed he gathered at White Pigeon, Michigan, the next day after Franklin Pierce was elected president. We were coming west with wagons, and I had a pair of horses in the same wagon with Mr. Springer's. We came west together, and we have always been like brothers ever since. As we came to White Pigeon I saw some monstrous big apples in a store window, and I ran back and bought ten apples for ten cents. They were so big I could not carry them in my arms. I could only take half of them, so I took them back and only kept half a dozen. I claim that was the origin of the Wolf River apple.

A Wisconsin Orchard.—Mr. A. D. Barnes, of Waupaca, Wis., in a letter under date of March 3d, states that "spring seems to be on the way" and further informs us that "the hardy sorts of apples, cherries, and plums are all O. K. and will yield abundantly this summer, but peach, pear, sweet cherries and some Japanese plums are decidedly dead as to last year's growth, and in some cases, at least, two year's growth is gone."

GROWING MUSKMELONS FOR MARKET.

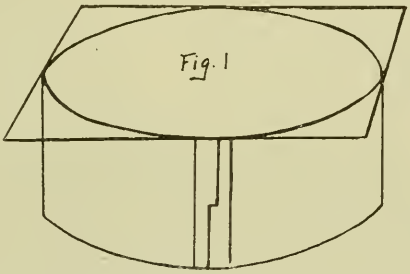
J. VINCENT BAILEY, NEWPORT.

Muskmelon growing in Minnesota, while not carried on so extensively as in some states, is increasing in popularity among market gardeners, and especially with those who grow for the Twin City markets, as there is quite a local and also a good shipping demand for home grown muskmelons. When the season is favorable the home grown melon is far superior to the shipped stock and will sell for twice the price.

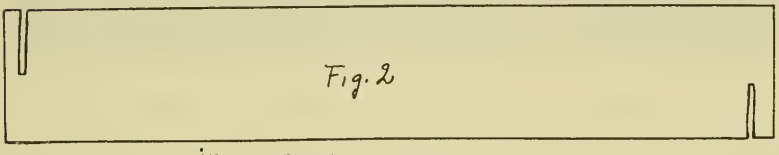
The crop requires high cultivation. I do not know of a vine crop that will respond to good cultivation and care quicker and with better results that the melon crop.

The soil should be a sandy loam for forcing early varieties, and a light sand is more desirable. A good quality of melon may be raised on heavy soil under favorable conditions.

The soil should be fairly rich, but for forcing a poorer soil is to be preferred, as a rich soil tends to produce too large a vine



The Pasteboard Plant Protector with Glass Covering in Position for Use.



The Pasteboard Plant Protector Spread Out.

growth and makes the melons ripen slowly; and if the season is wet the melons will crack more in rich soil than in poor soil.

The man who raises a crop of muskmelons for market has his share of troubles, for there are many insect pests and fungous diseases to guard against and destroy. Probably the worst of these is the cut-worm, as there seems to be no very practical way to destroy them, although much may be done to prevent their existence in the melon field by fall plowing, which deprives the moth of shelter for the eggs. Collars of paper or tin placed around each hill and

pressed into the ground half an inch will keep the worms from destroying the plants. The paper collars are very cheap and can be used on a large scale. A pane of glass placed over the top protects the young plants from the cold winds and late spring frosts, so that the collar really serves the double purpose of keeping the cut-worms out and supporting the glass protector.

The striped beetle is also an enemy, although a little air-slaked lime or land plaster will scatter them so that they will do little or no damage. The melon louse is quite a serious pest in some melon growing states, but has not as yet become very bad here.

Melons are very susceptible to diseases in this section, as the climatic conditions are not always favorable, and the plant is attacked in a weak condition and easily succumbs. "Anthracnose," or what is commonly known as rust, is a very destructive fungus which

J. Vincent Bailey (on the left) and his Load of Muskmelons Ready for Market.

attacks the plants and soon spreads over a field. I know of no remedy for this disease but to keep the plants in as vigorous condition as possible.

"Damping off" also takes a large percentage of the young plants in early spring if the weather is cold and wet, but if plenty of seed is used enough plants will usually pull through to make a stand.

Perhaps my description of diseases and insect pests would give the inexperienced grower the idea that the melon is hard to raise, but with good care and cultivation and close watching a good crop is generally the result.

It is very essential for the grower to get his melons on the market as early as possible, for the early ones bring a much better price than the late ones. The first few days melons are on the St. Paul market they usually bring about $3.00 a bushel, while in three or four weeks they are hard to sell at twenty-five cents. This shows the importance of putting forth every effort to get the crop on the market early.

In order to raise melons for early market growers resort to methods of forcing the plants under glass and transplanting, and starting under glass in the field. The latter way is probably the most practicable, as the hotbed melons are set back when transplanted.

The nutmeg varieties are very good for early results, but the salmon-fleshed late varieties are of better quality and are used for the later crops.

Prof. Washburn: Are you troubled with insects?

Mr. Bailey: Even as clean as we can and aim to keep our melon field the cut-worms do work in from the side. They get across no matter where we have our melons, and they destroyed all our early melons.

Prof. Washburn: Was the blight bad on the melons themselves?

Mr. Bailey: Yes, it was.

Prof. Washburn: Could you not check it in any way?

Mr. Bailey: So far we have not been able to do anything to prevent it.

Prof. Washburn: Do you suppose if you had taken it in hand early enough you could have prevented it by the use of Bordeaux mixture?

Mr. Bailey: I don't think so. We tried Bordeaux and experimented with it in various ways, but had no success whatever in preventing blight. This disease does no harm when the atmosphere is dry, but as soon as the atmosphere becomes moist—and on damp days it is worse—it does not take long to destroy the whole patch.

Prof. Washburn: Then the Bordeaux has no effect on it?

Mr. Bailey: I think not. I have corresponded with a number of other melon growers, and they seem to have had the same experience with Bordeaux. I do not think it is of any benefit whatever to prevent blight.

Mr. P. Clausen: I would like to ask Mr. Bailey whether he ever tried planting them out in small pots?

Mr. Bailey: Yes, I have tried that with fairly good success. Another method that is very good is to use this same paper, but make the cylinders smaller, about four inches in diameter, using the same kind of a fastener. Put them in the hotbed without any bottom. When I set them out I just peel the paper off. Another method is to use an inverted piece of sod. Use some bluegrass

sod and cut the pieces about four inches square. I cut them about a foot square and then cut them up in the proper dimensions. I do not like that method as well, however, as planting the melons right in the field and giving them this protection I spoke of.

Mr. Clausen: I have had a little experience with melons. I have not raised them very much. I have tried them in the greenhouse in flats and transplanted them into small pots. I think a transplanted plant does better. You know cabbage transplanted grows a great deal better than those that are not transplanted. I use the common small pots, and I find they do pretty well in that way. You can just take up the pots and tap the bottom a little, and the plants will drop right out. They do not grow as fast as melons planted right out in the field, but they fruit quicker. I never was able to get the fruit as early from melons planted in the field as I got from those melons started in pots or in flats, and then transplanted into pots when the third leaf appeared. They get a better root that way. I think that is a very good way, although perhaps they do not yield as heavily as field planted melons.

THE BEST METHODS OF PROPAGATING THE PLUM.

THOS. E. CASHMAN, OWATONNA.

I will give you the method that has proven most successful with me. To begin with, as soon as the plum is ripe in the fall we secure the pits from our wild native, or cultivated native varieties if they are to be had, by means of treading on them in a tub or like arrangement until the pulp is loosened from the pit. Then they are dumped into a coarse sieve nailed to a frame made of 2x4 scantling, and then we turn on the city water by means of a hose and nozzle until the juicy part is all washed through the sieve, nothing remaining except the pits and skins, which are easily separated by hand.

When separated, we place the pits not over half an inch deep on boards laid tight together in a shady place that has good air circulation, and leave them there until the ground is prepared, taking good care that they do not get dry or heated. If they get too dry, the shell will crack open, and the meat part will likely rot before the germinating season arrives.

We usually prepare the ground the first week in September or about the time the plum is ripe. The land should be made as rich as possible by means of a good coat of fertilizer and plowed at least ten inches deep. After the ground is thoroughly pulverized we take a corn-marker and mark the rows as straight as possible, and then a common four shovel riding corn plow with the center shovels removed is used and the outside shovels spread

so as to follow the marks left by the marker, and set so it will leave marks about two inches deep. The seed is dropped in about three inches apart in those marks, and if the ground is mellow enough can be covered by a disc cultivator which will ridge up the ground above each row. This ridge should be dragged down in the spring just as soon as the ground is fit to work, thereby loosening up the soil and giving the little sprouts a chance to push their way through and also nipping off any weeds that may be starting at that time.

If the soil is good and they receive sufficient cultivation, the majority of these seedlings will be large enough to bud by the last of July or the first week in August, which is the proper time for budding the plum. The bark can be removed freely at that time, and at the same time the bud will not get drowned out by too much sap in the wood. The buds should be placed as near to the ground as possible and on the northeastern side of the stocks to prevent freezing and thawing, and wrapped tightly with raffia. This raffia must be removed as soon as the buds have grown fast to the seedling, which usually takes about three to four weeks, to prevent the girdling of the stock. When winter approaches the ground should be heaped above the buds by means of a small plow, or if the trees are small a disc cultivator is just the tool.

When spring arrives, the dirt must be leveled back before the buds in the tree begin to swell, which is usually about the 10th of April. As soon as the buds begin to break open, the top of the seedling should be cut off just above the bud inserted. Should any of the buds fail to grow the seedling can be cut off square about two inches above the ground, the stub split about an inch and a half, and a scion, of the same variety as the buds used in that particular row, cut wedged-shaped and inserted in the crevice made in the seedling and waxed over nicely with beeswax, tallow and resin melted together. By doing this a person can get most of his seedlings either budded or grafted. The buds usually make the best growth, sometimes attaining a height of from four to seven feet the first season.

As soon as the bud or graft gets nicely started, a lath should be firmly driven down beside each tree, and as the little sprout attains some height it should be tied to the lath with a soft cord. This will have to be repeated two or three times during the season, so as to keep the wind from whipping off the little trees before the wood becomes hardened. The following spring the tops should be cut back to about three feet, which

to my notion is the proper height to start a top on a plum tree. If the trees do well, almost half of them will make nice 9-16ths to 11-16ths inch trees and 4-5 ft. high, a good size for transplanting.

Prof. Hansen: Mr. Cashman spoke about grafting above the ground. I have had better success grafting below the ground. You lose too many of them grafted the other way. You put in the graft two inches below the surface, cover it up with earth, and you will get a splendid result; you will get a good stand. You need no wax or tying. The graft is only visible above the ground by the topmost bud.

Mr. Elliot: You would not recommend splice grafting on the plum?

Prof. Hansen: I would prefer side grafting.

Mr. Elliot: In Iowa I heard the statement that they would recommend whip grafting.

Mr. C. S. Harrison: Why can't we graft plums in winter as well as apples?

Prof. Hansen: I think they start a little in the cellar, and that means failure. Both scion and stock should be dormant, and the trouble is to have that condition in the ordinary cellar. You all know what trouble we have in getting a stand of plums.

C. L. Smith an Agricultural Editor.—C. L. Smith, one of the oldest members of this society and an honorary life member since 1889, has lately removed from Bemidji, of this state, to Spokane, Wash., where he is in business conducting on agricultural paper under the title of "The Inland Farmer." Mr. Smith, with the exception of the last two or three years, has always been a regular attendant at our meetings. He is a forceful speaker, has had large experience with Farmers's Institute work, and it is in this capacity that he went to Washington, where he is now, it is evident, permanently located. We hope to hear of his success in this new field.

Prof. Washburn and the Birds.—Prof. F. L. Washburn, of the State Experiment Station, in a recent letter speaks as follows of his attitude on the preservation of birds: "I think that possibly you have the wrong idea of my position as regards birds in their relation to horticulturists. I want to protect the birds from cruelty and from ignorant slaughtering, and wish to see orchardists and berry raisers discriminate as far as possible, but I should hardly dare to say that a certain bird that eats both berries and insects is a beneficial bird. Of course, a bird like the cuckoo that we have here, that eats only insects and never touches fruit or seeds, one can say is an excellent friend to the fruit raiser, but where a bird has a vegetable diet as well as an insectivorous one it seems to me the orchardist or the berry raiser is justified in looking at him with suspicion. I just say this in order that you, or others, may not think that I am championing almost all of our common birds. The robin particularly, about which so much sentiment has gathered in the past, seems to be at times a most destructive bird, one of our most injurious species possibly, and yet that very sentiment blinds us in considering his case."

Secretary's Corner.

MONTHLY REPORTS FROM THE ST. LOUIS EXPOSITION:—Regular reports of the doings in connection with the Minnesota Fruit Exhibit at the Exposition may be expected in each issue of our monthly, either in the Secretary's Corner or elsewhere in the number.

DEATH OF R. M. KELLOGG.—This noted horticulturist and strawberry grower died at his home in Three Rivers, Mich., Feb. 24th, at the age of sixty-one. He has been prominent in Michigan and national horticultural affairs and was noted as a lecturer on his favorite subject. As an expert strawberry grower, he stood high, no one in this country perhaps having a larger or more successful experience with that fruit.

MEMBERSHIP OF OUR SOCIETY.—At this date, April 13th, the membership of the society, including life members, is 1,625, this number bring 350 ahead of last year at this time and 195 more than at the close of last year. Shall we reach the 1,800 mark? And will you help us to do this? Not so very long ago we had set our mark *high at 1,000*, to which we hoped some time to attain. Where shall we set it now?

FRUIT TREES AT SLEEPY EYE—"Native plums are in good condition; all the Japan Burbanks and all foreign plums are either killed or damaged to a large extent; many of the hybrids are dead, such as Nebraska, Milton and several others. Cherries are in a rather poor condition. Our hardy standard apples are all right. Some seedlings are gone. Northwest Greening is hardier then Wealthy. Repka Malenka is sound to top bud, and I consider it of value as a late keeper." M. PENNING.

A SOUVENIR OF THE EXPOSITION TO CONTRIBUTORS OF FRUIT, ETC.—The Minnesota Fruit Exhibit is paying for 600 six-inch white plates with gilt edge, a band of olive green bordering the edge and the monogram of the exposition, in same color, in the center of the plate. It has been suggested that these plates might be given out as souvenirs to the contributors after the close of the fair. Perhaps nothing else would be more suitable that is available, and we presume these would be.

FRUIT WANTED FOR THE ST. LOUIS EXPOSITION.—A circular letter on this subject has already been or soon will be sent out to the fruit growers and others amongst our membership, seeking for information as to who are likely to furnish what we may need for this purpose. A *prompt response* is earnestly asked from each one to this circular. If you have nothing to furnish kindly say so, or if you will have—provided there is a crop—please let us know this also without delay, giving names of varieties and amount you might like to contribute. It is very necessary that the secretary should have this information promptly so as to plan the work ahead in a way to supply easily the large amount of fruit it will take to make the fine fruit exhibit you all have a right to expect.

A VALUABLE BOOK FOR FREE DISTRIBUTION.—Prof. F. L. Washburn, state entomologist, has recently issued the eighth annual report of the office he so ably fills, and a copy is now before me. It is not only valuable from a practical standpoint and interesting reading, but it is well gotten up as a literary work and very fully illustrated. This report is especially valuable to the fruit growers and nurserymen of the state, and Prof. Washburn must have had their interests in view very largely in preparing it. The matter from page 50 to nearly the end of the book is devoted almost entirely to insect pests which affect horticulture, the horticultural laws in the various states, and particularly on page 98, etc., a complete alphabetical list of all the insecticides and fungicides, with descriptions for making and applying the same in different cases. On page 121 is an alphabetical list of some of the many fungous diseases and injurious insects and remedies for the same, with numbers referring to the insecticides and fungicides which immediately precede this list. I regard this as one of the most handy books for the horticulturist to keep on his table. A copy can be secured free by application to Prof. Washburn at St. Anthony Park, Minn. Don't fail to get a copy.

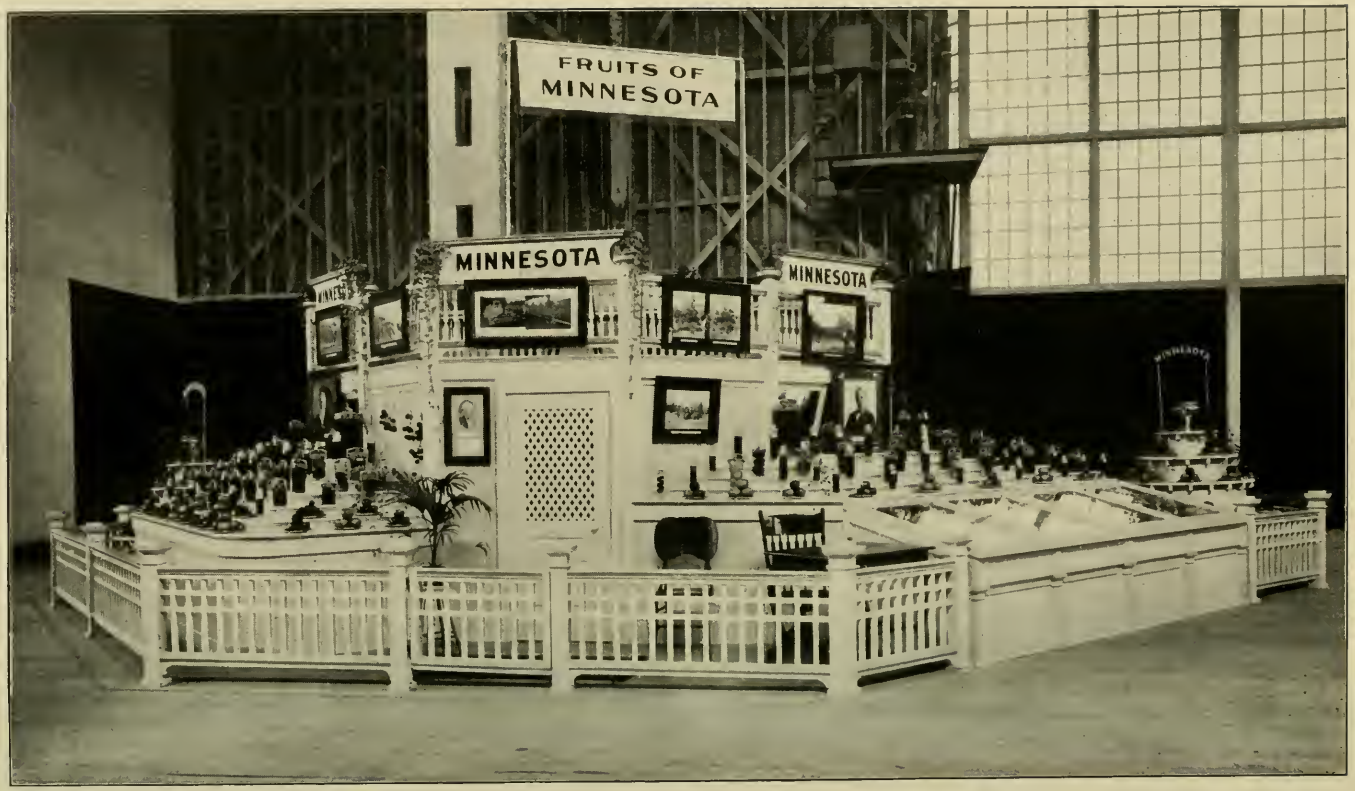
THE MINNESOTA FRUIT EXHIBIT AT ST. LOUIS EXPOSITION.—As noted in the April Secretary's Corner, the material to be used in erecting the structure on which Minnesota fruits are to be shown at the St. Louis Exposition was shipped from Minneapolis, in a car by itself, on March 15th. Mr. Thos. Redpath, who is to be there in charge of the exhibit during the exposition, left here for St. Louis March 19th. The car arrived there, and its contents were delivered on lot 46 in Horticultural Hall, where our exhibit is located, on March 22nd. On March 24 Secy. Latham reached St. Louis, and at 8 o'clock the next (Friday) morning, with the assistance of three carpenters and Mr. Redpath, work was begun upon the structure. At 4:30 P. M. the carpenters quit for the day (being union men, at 55 cents per hour), and the next day being Saturday they quit at noon, and everything had to wait a day and a half till 8 A. M. Monday morning. However, we were far enough along so the tinsmiths put in a lining to the large refrigerator being built in the structure Saturday afternoon, all ready for the carpenters to cover it over. To expedite matters another carpenter was employed and the work rushed so that the structure was completed excepting a few finishing touches Saturday night, April 2nd, at which time Secy. Latham left for Minneapolis.

During the week the cold storage where our fruit is being kept was visited and the fruit examined. It was found in best condition with prospect of keeping until called for, as it will be, at various dates during the summer and up to the middle of August, by which date we hope to have plenty of early ripening apples fresh from home. (Who has early apples to supply use?)

Mr. Redpath writes that the last carpenter work was completed Wednesday noon, and he was putting on paint, commencing that day. A letter from him dated April 11th says he has been all over it once, and "it looks very neat." The plan is to put on four coats of white, using varnish in the last coat and then stripe not too lavishly with old gold.

They have strenuous weather in St. Louis at this season of the year, judging from our experience. Rain, frost, wind and resultant mud in varying proportions filled in the period referred to, and the letter above says, "You remember we stopped at the Japanese building. It blew down Friday evening. We had a big wind; I thought it would blow everything down. It dried the mud." (Much needed—the last).

Secy. Latham will be in St. Louis again April 25th to assist in getting the exhibit in shape for the opening, which is to be Saturday, April 30th, at noon, and will have become a accomplished event before this number reaches our readers.



MINNESOTA HORTICULTURAL EXHIBIT, AT LOUISIANA PURCHASE EXPOSITION (ST. LOUIS WORLDS' FAIR), 1904.

From photograph taken May 4th. The black background appearing in the engraving is very dark green burlap against the wall twenty feet away from our installation, behind a space to be occupied by Rhode Island.

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MINNESOTA FRUIT EXHIBIT, WORLD'S FAIR, ST. LOUIS.

A. W. LATHAM, SUPT.

When the Louisiana Purchase Exposition (popularly called the World's Fair) opened at noon on April 30th, the Minnesota Fruit Exhibit was complete in all its details. Every plate and glass jar of fruit and plant which has a part in the display was in place at noon of that day, and the Minnesota exhibit appeared as shown in the pictures accompanying this report, with the exception that some days later the flag seen hanging above the exhibit, bearing the words, "Fruits of Minnesota," was placed there, and a couple of chairs and a table were also placed within the rail.

A number of other state exhibits were either completed or nearly so on opening day. Pennsylvania touches elbows with Minnesota in the Horticultural Hall on the southwest, and New York adjoins the Minnesota exhibit on the south. The structure belonging to the latter state is to be seen in one of the accompanying pictures and will be recognized by the name of the state upon the exhibit. Both of these exhibits had some fruit on them on opening day, the flat tables used by the New York exhibit being covered with apples, which were, however, moved on the following Monday to permit the completion of the structure. The Washington exhibit is located next to the Minnesota exhibit on the east. Nothing had been done as to the display of this state except to erect a structure in the center of the space allotted to it, and the boxes containing the Washington exhibit were still unopened when I came away. Some of these boxes are shown to the left of the turntable in the same picture in which the New York installation appears. Next to the New York space on the south is the Illinois exhibit; nothing was on exhibition there. Beyond that to the south is the Missouri space, where no fruit was displayed opening day, as the structure they are building was not nearly completed. I understand that $22,000 is being put into the

structure alone for the Missouri fruit display, which includes an overhead electric railway and other special features. Most of the installations which were all or partly done were in the farther corner of the hall, including Iowa, California, Texas, Kansas, etc.

As stated to be my purpose in the Secretary's Corner of the May number, I went to St. Louis again on April 24th and was there on the afternoon of the 25th to assist in getting the exhibit in shape for the opening. I found the structure designed for use in making the display painted in white by Mr. Redpath, as planned, and all ready for our purpose, except a little striping of gold, which was done a day or two later.

Twenty-two bushel boxes of apples went from Minneapolis cold storage by express on Tuesday, April 26th, reaching St. Louis on Wednesday afternoon, and should have been delivered at our space on Thursday morning, but the rush of work thrown upon the express companies made it impossible for them to get the fruit there on time; and as matters seemed to be in no better shape Friday morning Mr. Redpath went down and employed a private expressman to bring up the fruit.

I had also procured from a near by greenhouse a quantity of trailing vines and ferns to be used in decorating the turntables and other places about the exhibit. The boxes of fruit were opened on Friday and with the exception of two boxes, which were held as a reserve, were placed upon the shelves. About one-half of this fruit went into the refrigerator cases in a temperature of about 50 degrees, and the rest on the turntables or the open shelves.

Mr. Redpath, before my coming, had already opened up the boxes of canned fruits and found them in good condition, none having been broken in transit.

Most of the cold storage fruit was found in fine shape, especially the Wealthy, of which there were a number of boxes from the Jewell Nursery Co. and one from Preston McCulley, Maple Plain. None of the balance of fruit had kept as well as the Wealthy, with the exception of a box of Jewell's Winter, from the Jewell Nursery Co., which was also in very fine condition. There were two boxes of University from Mr. A. D. Leach, which were exceptionally nice, barring a few bruises which showed a good deal more on this fruit, being a golden yellow color at that stage, than on the darker apples like the Wealthy. Two boxes of Patten's Greening, from Mr. R. H. L. Jewett, were found to be very nice specimens, but not keeping very well, being more or less spotted and discolored. This injury may have been caused by delay in getting them into cold storage until some time after being gathered, although I have not the facts at

hand to know definitely about it. Perhaps it may be a variety that does not keep well in cold storage. There was one box of Peerless, also from Mr. Jewett, which was in about the same condition as the Patten's Greening referred to. A box of Okabena from the Jewell Nursery Co., containing also about a peck of Hyslop crabs, came out in fair condition. The Hyslops were perfect, and some clusters adhering well to the stem were tacked up on the side of the installation, as may be seen in the engraving. These crabs made a material addition to the appearance of one corner of the display and were often commented upon by passersby, to whom they were evidently much of a novelty. There were also two boxes of a seedling apple from Thomas Redpath that kept fairly well and looked very nice on exhibition. This is an interesting seedling as being a grandchild of the Northern Spy.

Five cases of Duchess of Oldenberg, from the orchard of Mr. F. J. Butterfield, came out in very bad shape, but for this misfortune Mr. Butterfield is not to be held at all responsible, as the fruit was delivered by him according to directions to the depot of the Minneapolis & St. Louis railroad with the understanding that they would go forward by freight and be delivered at St. Louis the third day. Before forwarding the fruit the railway company ascertained there would likely be a long delay in delivering, so that it was not sent, and by the time notice of it being there had reached me and we could secure it it had already been a number of days gathered, and as a result was too much matured to keep well in cold storage.

I have gone considerably into detail as to the condition of this fruit on account of the lessons to be drawn from it. In order to keep well in cold storage fruit must be put in *immediately* after being gathered. Specimens must not have been bruised in the least either in handling or by packing too closely in the box. Pressure may be exerted in the box so as to indent the side of the fruit, which shows at once after taking out, and especially in light colored fruits. Gathered with sufficient care at the right stage and stored at once, almost any fruit will keep well in a uniform temperature of 32 degrees, although experience shows that some varieties keep very much better than others, Wealthy being one of the good keeping sorts.

The management of the fair were unfortunate in not being able to furnish us the plates that had been ordered through them, so that temporary arrangements had to be made in setting up the display to have it ready on time. Before I came away from St. Louis, however, the plates were delivered and proved to be very nice for the purpose, a white plate with a gilt edge and a broad band of rich olive

green, an inch and a half wide, all around the top of the plate next to the edge, with a monogram of the same color in the center composed of the initial letters of the name of the exposition.

The engravings used with this article were made from photographs taken on Wednesday afternoon, May 4th. Being at the Administration Building that afternoon, I arranged to have an artist come the next morning and take these pictures, intending to have Mr. Redpath standing by when the picture was taken, but instead of waiting till morning the artist went down immediately after my leaving the office, and as I had not at that time spoken to Mr. Redpath about it, the pictures were taken without any familiar face accompanying them, which I regret. This is the only instance as far as my connection with the fair is concerned where the management or any one connected with it succeeded in getting ahead of a promise.

The photographs referred to are two, one showing what was intended in the original plan to be the rear view of the installation, though circumstances have made it the front view. I refer to the picture showing the lattice door in the center with the picture of Mr. Gideon at the left of it. This view faces towards the center of the hall, and the sign above it, "Fruits of Minnesota," can be seen and read without difficulty from that point, which is several hundred feet away, there being clear space in that direction. The other picture is a quartering view of what would be the front of the installation if our space had happened to have been laid out with the long side the other way. It does not show to good advantage in the picture, for reasons that those who are accustomed to taking photographs will understand. The turntable to the right of the picture is the same size as the one at the left and of course is not far enough away to make any such difference in the apparent size as is shown in the picture. The post seen on the inside of the rail is somewhat of an injury to the installation but not so much of a one as appears from this photograph. This view of the exhibit is really the most attractive one, and the picture by no means does it justice. In neither of these pictures can the fruit in the glass refrigerator cases be seen on account of the distance and angle to the glass at which the instrument stood, but to passersby it is as plainly to be seen under these glass covers as on the open shelves. A thermometer in the refrigerator cases shows a temperature of from 48 to 50 degrees, in which, of course, cold storage apples can be kept much better than on open shelves. It is in these cases that small fruits, such as strawberries, raspberries, etc., that would scarcely keep at all on the open shelves, will be shown.

Minnesota Fruit Exhibit, World's Fair, showing north side of installation.

The judge made a formal examination of the exhibit on the forenoon of the day that I came away, Thursday, May fifth. He informed me that Minnesota had the best exhibit of canned fruits in the hall, having the largest assortment and of fruit retaining its natural color. This we consider a high honor, as there are some very fine exhibits of fruit in glass jars by some of those states that are specially interested in fruit growing, some of them having great numbers of jars of large size and containing beautiful fruit. The judge also said that the apples in our exhibit for size and color and freedom from blemish received markings higher than the average, and this of course was also gratifying to us and hardly expected, as the most of the fruit displayed by us was gathered after the severe storms of last September that knocked off the best specimens. In other respects the exhibit also was highly commended, especially the feature of cold storage and exhibition of fruits under glass in a cold temperature. There are a number of very showy and some very expensive installations in Horticultural Hall that are fine specimens of that class of work, but in most cases they are not specially adapted to the exhibition of fruits, and the effect is to attract attention to the structure instead of to the fruit that is displayed in connection with it. The Minnesota exhibit is certainly free from this charge. Every feature of it is adapted to the purpose of making more complete and convenient the utilization of the space alloted for the fullest display of the fruit shown upon it.

In only two respects was the Minnesota exhibit found inferior to others, and these are in the number of varieties and in the number of plates of fruit. Of course it is not practicable for Minnesota to display such a large list of cultivated varieties and thousands of plates.

We were unfortunate in not being able to revolve the turntables on opening day, but even if the motor had been in place it could not have done, as the connection to furnish the electrical power had not been made with the hall even when I left St. Louis. We had the misfortune to have our motor delivered at some unknown place instead of to us, as it should have been the middle of the last week in April, and it was not until May second that it reached us. Before I left St. Louis it had been put in place and everything all ready to start the machinery to revolve the tables when the power is turned on.

I have tried to write quite frankly in regard to the installation of this exhibit and as to its appearance. The reader must judge for himself also from the pictures shown. From personal observation,

as compared with what other states are doing, I believe that Minnesota is making and will continue to make a fruit exhibit that will be an honor to the state and that the members of our society may feel an honest pride in having an opportunity to assist in maintaining it. The circular sent out about May first asking for contributions for this purpose has been quite generally answered, but there are still some of the principal fruit growers in the state, as well as others, to be heard from, and as superintendent in charge of the exhibit, as well as secretary of the society, it would be a great assistance in making preparation for the fruit needed to keep up the exhibit to receive early replies to this circular, and a personal request is made that those who have not already responded would do so without delay.

Regular reports from the St. Louis exhibit may be expected in each issue of our magazine during the continuance of the fair. One or two such reports should appear in each number.

I left St. Louis to return home on May fifth. Mr. Redpath will be alone there in charge of the exhibit until May 15th, when Mr. W. L. Taylor, of Howard Lake, will be with him for a time to render needed assistance. Arrangements have been made for furnishing fresh fruits, either from the Minneapolis or the St. Louis cold storage, every ten days in sufficient quantity so that one-half of the exhibit may be renewed that often, and we expect with this supply to be able to keep the display in first class condition.

I enjoyed great pleasure in meeting in Horticultural Hall two members of our society who will be well remembered by those who were numbered in our ranks twenty and twenty-five years ago. Mr. William McHenry, who twenty years ago was a resident of St. Charles of this state, and was for many years prior to that a member of this society, is there in charge of the Texas fruit exhibit. He looks very much as in the days when we knew him in Minnesota, except that time has silvered his hair and long, heavy beard. The old friends from Minnesota who are visiting the exhibit will have an opportunity to meet him in Horticultural Hall. Mr. U. S. Hollister will be remembered as the secretary of this society for three years, 1880, 1881 and part of 1882, until his place was filled after his resignation by the appointment of Oliver Gibbs, June first, 1882. Mr. Hollister at that time was engaged in the seed business in St. Paul. He is now one of the prominent business men of Denver, being connected in an important capacity with the Continental Oil Company. He was visiting the exposition with the governor of Colorado and his staff. It was very pleasant to meet with one who had served with us well, although many years ago. I had made a number of efforts to trace Mr. Hollister but without success. Mr.

Hollister is a man now of something over sixty years of age, although his appearance does not indicate his age. He is still a robust, strong and vigorous man. I should not have recognized him from the changes which maturity has brought about in his appearance. We have promise of hearing from him through our monthly.

APPLE BLIGHT IN REVIEW.

PROF. WM. ROBERTSON, MINN. COLLEGE OF AGRICULTURE, ST. ANTHONY PARK.

Prof. Robertson: Almost everybody here lays everything to Mr. Philips or the secretary. I wish to lay this to the secretary. He gives me something to talk about every year, something I don't know anything about, but this year he gave me a subject that I know less about than any other, but I took it because I want to learn something about it myself. I looked up all the literature I could find in review. It does not all appear in this paper, but I have gone over everything I could find and then hammered it into the paper. If there is anything I have not suggested in the paper as to the work that has been done I think I can cite you to where you can find the results of the work in that line. I might say I have not reviewed a great deal of the literature because it is nothing but a reiteration of the work of somebody else, but I have taken up some of the work that has been done by three men, as mentioned in the paper.

Literature on pear blight, frozen-sap blight, apple blight, fire blight, twig blight and blossom blight, all of which are the same disease, dates back to the eighteenth century. You may find some interesting extracts in the N. Y. Agr. Exp. Sta. Report for 1886. The writers seem to include horticulturists, editors and preachers.

In 1817 Wm. Coxe says the disease is due to cultivation of fruit trees.

In 1843 Thos. Fossenden says the causes are a borer, the sun's rays and high manuring. He advises cutting off branches below the affected parts.

H. W. Beecher says autumn freezing of unripe wood produces a poison.

As early as 1846 a Mr. Gookins says he strongly inclines to the belief that it is an epidemic and that the air is a medium for carrying it. He inoculated a pear tree by lifting a portion of bark and inserting virus from an affected tree. This is the first record I find of experimental work.

In 1848 Downing argues that the blight is due to scorching caused by drops of water acting as lenses on the sun's rays.

J. A. Kennicott, as early as 1850, finds flowers and fruit spurs affected with blight.

In 1863 J. H. and C. B. Salisbury ascribe the disease to fungi.

In the proceedings of the American Pomological Society in 1867, T. Meehan also says, "Here, I believe, we have to deal with a parasitic fungus. It grows in the bark, causing fermentation."

In 1870 a pear tree was successfully inoculated by lifting the bark and inserting a piece of bark from a blighted apple tree.

As late as 1891, G. F. B. Leighton, of Virginia, tells the American Pomological Society that blight is due to a change of thirty degrees or more in temperature within twenty-four hours, and will show in just nine days after such change.

In 1879 Prof. Burrill, of Illinois State University, now an old man, discovered that apple blight is a bacterial disease, due to a parasite which lives, feeds and multiplies beneath the bark. He named it micrococus amylovorus. It is now commonly called bacillus amylovorus.

Prof. J. C. Arthur, then of N. Y. Agricultural Experiment Station corps, now of Purdue University, next set about *proving* this parasite to be the cause of the disease. He infected trees with the virus from other trees. He made what are called pure cultures of the bacteria from infected trees. Then to determine whether the medium in which they had lived and worked would produce the disease without the bacteria, he strained the liquid through unglazed earthenware to remove the parasite and tried inoculation, but the strained liquid would in no case produce the blight. To find whether any other bacteria would produce the blight he inoculated healthy trees with all of the other kinds of bacteria in his laboratory, but without success.

To learn whether the wind may distribute the disease he forced a current of air over blighted parts on to a potted pear, but got no blight. To see whether rain might be effective, he dropped water from a blighted branch on to a potted pear at the rate of four drops per minute, and got a slight infection. He tried to communicate the disease through the root by watering the plant but failed. To learn whether the bacteria would live through the winter in dead matter, he tested and found them the next April in a branch which had been cut in midsummer and thrown into a tank of water, the water being drained off in the fall, leaving the sediment moist, however. By inoculation with one virus he produced blight in apple, pear, quince, wild crab, hawthorn and mountain ash.

H. M. Waite, of the Agricultural Department at Washington, is the next man who does extensive work in the experimental line. Although Kennicott, in 1850, calls attention to blight in flowers and fruit spurs, and Geo. Peffer of Wisconsin does the same again in

the Wisconsin Horticultural Society in 1881, stating that only trees that were in blossom on two particular days of the preceding spring were blighted, and even sends specimens of the blighted blossoms to Prof. Burrill—who pronounces the affection blight—little thought seems to have been given the matter of blossom blight till it was taken up by Mr. Waite.

For successful inoculation of buds, growing tips, young shoots and fruit, a puncture had been found necessary to get the bacteria through the hard covering. Waite tried inoculating blossoms without puncture by dipping a camel's hair brush in liquid containing the bacteria and touching the center of the flower. He was successful in producing the blight. When watching one of these blossoms one day he noticed a bee light upon it and begin feeding. Since the bacteria grow and multiply in the nectaries of flowers, he asked himself why this bee might not carry some to the next flower it visited and inoculate that as he had this—with his brush. To test this he captured two bees and from them got cultures with which he successfully produced blight. Here he thought was an explanation of how a whole orchard might become affected within a few days, at blossoming time. To test the matter thoroughly he obtained an orchard in western New York, free from blight, started artificially an epidemic of blight by inoculation, protecting certain flowers by covering with bags of mosquito netting, thus leaving them exposed to the wind but protected from the visit of insects. He asserts that in no case did he get an infection within the mosquito netting, while there were plenty of infections outside.

Mr. Waite claims that the bacillus amylovorus will not stand drought for a week but will stand hard freezing, those grown in a warm room suffering no injury from a temperature of 0 degrees F. He therefore concludes that very few live through the winter, only those at work within the branch when the season closes. These, when the warm sun in the spring starts a strong flow of sap, begin active work and multiply rapidly. As a result of their action a gummy exudation takes place. Various insects feed upon this, and if it happens to be at blossoming time their visits to the flowers spread the disease over an orchard in a short time.

To summarize briefly, for we cannot within the scope of this paper follow out other investigations, the general consensus of opinion at the present time is that apple blight is a bacterial disease caused by bacillus amylovorus, feeding under cover of an outer layer, and therefore that it cannot be destroyed by spraying; that the injury is caused by the parasite itself and not by any by-products formed; that the only remedy is to remove with the knife all blighted

portions, cutting several inches below the affected parts, being careful not to spread the disease by infection from the knife; that infection takes place chiefly through the blossom and at the tips of young or rapidly growing shoots; that in all other cases breaking of the surface is necessary to infection; that highly cultivated and heavily manured orchards are more susceptible to the disease than those making a slower growth, and that insects are the chief agents in distributing the disease.

There is an abundance of literature on the subject, but the substance of Burrill's work will be found in Illinois Hort. Report for 1879; Arthur's Report of N. Y. Ag. Exp. Station for 1884, 1885 and 1886; Waite's in Year Book of Dept. of Agr. 1895; and report American Pomological Society, 1901.

Waite gives full directions in this Year Book of 1895 for the cutting and removing of blighted portions, and as the book may be had for the asking I shall not give details here.

Mr. Yahnke: I would like to ask Prof. Robertson a question, and it is this: This blight usually makes its appearance after a heavy fall of moisture when the weather turns warm. The atmosphere is very heavily laden with moisture, which is the time when the conditions for tree growth are the very highest. That is the time when blight generally appears. Now, how is it that it appears at just this season? I have found that trees which are heavily pruned in a dormant condition are affected the most of all by blight. You heard what Mr. Smith said about the Hibernal and others blighting. He cut the tops very nearly off and then had them top-grafted. The roots were very well developed, very strongly developed. They pushed the sap from the roots to the top, the top had no leaves to evaporate the abundant moisture, and the result was that the limbs were smothered and choked and fermentation took place. This fermentation of this sap which is being pumped from the roots to the top is not yet explained, but at the same time Mr. Smith would have found if he had root pruned his trees as much as he pruned the top and then top-grafted he would have had the best results and the least blight. I had a row of Duchess trees that had stood in sod for a few years and then they did not make much growth, but as a general thing if a tree does not have a chance to make growth it develops a strong root system. I was not satisfied with their growth, and as the trees were on high ground I put on a heavy coat of manure in the winter time. In the spring came plenty of rain, and the result was that the blight took nearly all the trees. The root system of those trees was very strongly developed, the atmosphere furnished the moisture to produce this blight, the sap was forced from the roots to the top, and the top of the tree was not sufficiently developed to use it up. If a man has been sick and his system is weakened, if you feed him strong beef tea and heavy and rich food he is going to die, and that is just the condition those trees were in.

Prof. Robertson: If you noticed it I gave a little sketch of this

literature in my paper. The literature begins way back in 1794 and runs all the way through, even down to this one of Mr. Peffer's. At the time he mentioned this feature he did not use this argument all the way through, but in a general way he explained that the disease was caused from a similar reason as that mentioned by the gentleman who spoke last. You will notice it is called "frozen sap blight." The thought was this, that as the sap exuded it would poison the tree. As I said, that was the thought really all the way through. In the demonstration I gave you I mentioned some of the tests that were made. He worked about six or eight years on this, and in no case did he find a blight in which these bacteria did not exist; he could not find a case where this sap exuded and blight appeared where these bacteria were not present. It showed it was a poison, and he tried to infect a tree with this disease. The condition of the tree, of course, would make a difference as to whether it would take the disease or not, just like it would be a question whether you and I would be susceptible to a certain disease if we were exposed. The poison that was mentioned brings out another fact. I said that in all other cases where the tree was afterwards affected the disease had been caused by a puncture below the place affected. We have an opening there so the disease or the germs can get inside. I said nothing about varieties, because there was not time, and there being tests made to see whether one tree contains a greater amount of moisture than another and whether it is therefore more readily attacked. It seems to me most probable that in most of the cases there is more moisture in the wood in the cases of those varieties that are so readily attacked by blight. Another thing was mentioned, that is, in regard to the amount of moisture. In that one case you get the sap conditions in which this bacteria can live and thrive and multiply so rapidly. As Mr. Waite says, that is the most favorable condition for their existence. If they dry up and die it proves that the circulation is very rapid and this moist condition disappears. I think that covers the ground.

Mr. D. S. Hall: I planted an orchard fifteen or twenty years ago, and the greatest enemy I had on the place was blight. I have been told to cultivate the orchard. I have tried that, I seeded it down to timothy and clover, I mulched it for some years, and for some years I did not mulch. I did everything I was advised to do by those who I thought had more experience than I had, but it was of no avail to check the blight, and for that reason I am especially interested in this subject of blight, as I think all of you are. I have taken a great deal of interest in what Prof. Robertson told us, but he did not tell us what I most wanted to know. He said blight was caused by a bug with some unpronounceable name. They say it is a bug and then let it go at that. The main thing that the people are interested in is not to know whether it is a bug or anything else, nor do they care what kind of a name it has, the principal thing is to know what remedy to apply to prevent it, something that will help us and relieve us of this condition and permit us to grow fruit on our trees. I asked the question several times today if there is any known way or method to combat the disease other than by cutting

the trees. I have tried the plan of cutting off the diseased portions of the tree. I have taken my clippers and clipped every limb off that was diseased, and the result was that the sap and the gum would exude and the tree would die. I have lost most of my trees, but have continued to replant in every case. I am glad to get the information from Prof. Robertson that the only thing we can do so far as known is to cut the tree to pieces.

Prof. Robertson: I am giving you the experience of men who are working in the orchard. Mr. Waite has a very large orchard down in Texas at the present time; Mr. Archer is another man who has a large orchard; they are both connected with stations, and Mr. Waite is working with orchards all the time. In regard to that cutting back, you will see if a person cuts back he may establish a new place for the infection of the tree by leaving a small part of the diseased part which opens the chance for infection again. In regard to the cutting I mentioned, you must cut several inches below the place where it seems to be affected. I did not say it was "bug" blight. That is the trouble with the farmer. Last winter when I was speaking about strawberries I told the farmer to plant two kinds, but some one said he should plant only one kind because the farmer could not learn anything. He is afraid he will learn something, and he does not want to meddle with anything he knows nothing about. I repeated the name a couple of times—and I don't know of a better way than to drill you people in repeating the name, just as I do with my pupils when I want them to commit a particular to memory—I have them repeat it over and over until they can't forget it. I don't believe you can learn by any other means. The name I gave was nothing more or less than the bacillus amylovorus. This blight, as we call it, works on the bark and softer part of the growth. You cut it down as far as it appears to be dead, and the work will go right on because you have not cut all of it out, and you will soon see the results in the disease continuing right along below the cut; so you must cut below the apparently affected part for a distance of ten or twelve inches to two feet. Cut the infected branch off. The best time to do cutting is in the fall. Work along one side of a row and then down the other. The mark on the twig where the blight has appeared is quite distinct. It will make its appearance early in the summer, and you can cut back far enough to cut off everything that is affected or is liable to affect the rest of the growth. Look over everything in the orchard and see that you cut everything out, and then repeat it in the spring. All the statements I have made are practically those covering the work done by the gentlemen I have mentioned, who are practical investigators. I have not had the opportunity to follow them to know whether their statements are true, but so far as I can see there is nothing to do except to cut back the trees that are affected. Mr. Waite does not say anything about pruning, etc. He says it is the movement of the wind when this gum exudes that carries it to other trees. Some do say that to prune everything severely is a good plan. This seems to be the only remedy aside from selecting those varieties that are least affected. Some literature has been devoted to that, but the work was of such

a nature that you could draw no definite conclusions from it. Mr. Waite has a big orchard where he is doing this experimenting on what he calls his theory, and he is using the saw and the knife to see what the result will be. You will see that this blossom feature is the most dangerous. Now, if the gentlemen who want information will ask me questions I will be glad to tell them all I know. There may be a good deal of theory about this matter, but I have given you simply all that I have been able to obtain on the whole subject.

Mr. Parks: Have you found anything in your research in regard to the scab or blight on the fruit that we have been troubled with this summer?

Prof. Robertson: That is a different growth entirely, and what I spoke about was simply the apple blight. There is lots of literature on the subject, and there has been lots of work done on that kind of blight. The fruit can be infected with the blight. You can inoculate the fruit with the blight so it will blight.

Mr. Kellogg: In your researches did you find anything that will protect from blight? Would a good circulation of air be any protection?

Prof. Robertson: I said a good circulation of air would tend to keep the moisture off. Blight is always more active in moist and warm weather.

Mr. O. W. Moore: Can you give us any light on what we call "spur blight" at blossoming time?

Prof. Robertson: That is the same thing. They speak of blossom blight, twig blight, spur blight and fire blight, and they are all the same thing. These gentlemen have taken the flower and inoculated it and left it for a certain length of time to watch the result. These bacteria start in on the blossom and work down through the spur into the limb, and they can trace the exact distance it goes down. Sometimes it stops at the blossom and fruit spur, and if everything is favorable they can tell the exact number of inches it goes down. At the Delaware station they made tests, and in some cases they found that it had worked down as much as fourteen inches.

Mr. Mitchell: Sometimes it stops at the end of the blossom stem, and the gum exudes where the stem joins the limb.

Prof. Robertson: It does often stop there.

Mr. Mitchell: How does it get introduced from one orchard to another?

Prof. Robertson: By the bees and other insects working from one orchard to another, and in that way it might easily be carried a mile or a mile and a half. The sap starts early in the spring season, and only a few of these bacteria live over the winter, but you find them very actively at work until quite late in the fall. They begin to multiply very early in the spring, and they cause exudation of the gum which results from their feeding, and Mr. Waite has found insects feeding upon them so that within a mile or a mile and a half insects could easily carry the infection. Mr. Peffer mentions an instance where trees were affected within two days where the conditions were favorable. A gentleman in California appointed

to investigate this matter of blight reported that in an old orchard where the old trees had died out and every alternate row was planted with young trees, that all of the old trees were affected with blight while the young trees were not affected.

Mr. Kellogg: Has electricity anything to do with it?

Prof. Robertson: I could not tell you.

Mr. Kellogg: It usually appears the strongest and seems to be more prevalent immediately after a severe thunder storm.

Mr. Yahnke: That is natural when the atmosphere is full of moisture which the leaves evaporate, and that is a favorable time for growth of bacteria.

Mr. H. H. Pond: Is there any known cause for the work stopping unless it is on account of the winter coming on? Sometimes a limb will blight for a short distance, and then the work will stop.

Prof. Robertson: I referred to that in my paper. Some men have made investigations in the case of old wood, some in the soft wood and some in the tips. In old wood it will simply make a spot, so that in answer to this question I would say that it seems to me the supply of food is not sufficient or the conditions are not favorable for its further growth at that place, and after it has gone down the branch a piece it stops. This twig blight you will find goes down quite a distance sometimes and then stops. The amount of moisture, condition of weather, temperature and so on we must always take into consideration. We must also take into consideration the condition of the tree and its ability to overcome those conditions which may have something to do with it. They all stop in the fall when the amount of sap grows less.

Mr. Brackett: We have heard a great many theories in regard to blight, and a great many experimenters have come to the conclusion that after a while we could tell what kind of weather would give us blight, and we would be able to tell the exact cause of blight. I think until we know more about it the best thing we can do is to plant our trees on a north slope where they do not get the hot sun. Keep them in a good, healthy condition and do not let them overbear; I believe that is one of the causes of blight.

Mr. Bentz: You spoke of only one kind of blight. Is that all there is? I find in my little orchard a blight on the bark and stock of the tree. On the branches it spreads till it kills the tree. It starts in a small spot. It came a year ago this last summer, and it has disappeared but has left the marks of the former blight. Quite a good many trees died of it, and a good many that were affected healed over this year.

Prof. Robertson: If there was an injury in the old wood it may have started there. Sometimes it may approach the tree by the leaves dying above, but that is no sign if the leaves are affected, that is no indication of the stem dying below. As Mr. Bentz says, this injury will strike the stem, and you will not see the effects on the bark for a long time, but it may gradually kill the tree. Sometimes it stops right there and does not extend any further.

Mr. Moore: That proves that the trunk should be protected?

Prof. Robertson: Yes, sir.

Mr. C. W. Spickerman: I would like to ask the professor a question. He said it was best to cut off the limb below the blight, and then he explained that often the disease is introduced through a puncture below the place where the limb is cut off. If you cut the limb off below the affected part is it not liable to be affected at the point where it is cut?

Prof. Robertson: Yes, but they all ought to be protected as soon as cut off to guard against infection.

Mr. Andrew Wilfert: I have been troubled with blight for several years, and I came to the conclusion it was all on account of the Transcendent and that the disease was carried in the air and by insects. I went to work and grubbed out every Transcendent I had on my place, and for the last three years I have had no blight. There was only one tree that blighted, and I cut that back, and none of my other trees have blighted since.

Mr. E. R. Hynson: I have had some little experience in regard to blight on the trunk. I take some wax and wrap it up with a white cloth and leave it on till the next year, and I have found that the new bark grows out perfectly.

Capt. A. H. Reed: I have a theory that I believe is true as much as I believe that the standard apple has but ten seeds. We all know that the Transcendent is the principal tree that fire blights, and we know that it is a fast grower. We know the bark presents a shining mark for the sun, and we know the tree never fire blights in the summer time until we have that hot weather in July or August. My theory is—and I believe I can sustain it—I have two Transcendent trees that have withstood all this for thirty-one years for the reason that they were set where the sun cannot strike the body of the tree until the bark is thick enough so the sun will not affect it. The theory is that the sap ascending the tree during those hot days, this bark presenting a smooth surface to the sun is heated to that extent that it heats the sap, and as it rises to the top of the tree that heated sap causes the ends of the twigs to blight and works down in the limb. If you have but a few days of that hot weather the tree does not blight so bad, but if you have several days or a week of that kind of weather the tree will fire blight clear down to the bottom. I believe I am right in this matter. I believe notwithstanding Bailey, Waite and the other investigators, when you come to study this thing you will find it is not a bug, bacteria or anything of that kind, but it is simply the hot sun causing the sap to heat that rises into the top of the tree that causes fire blight.

Mr. Radabaugh: May I have the privilege to contradict the captain? I have a tree on my lot in the city that was put there about fifteen years ago this spring and blossoms out very nice indeed, and it is shaded to such an extent that the sun can hardly get at it sufficiently to color the fruit, and this year for the first time it blighted, and I think I caught the connection when the professor told us about the bees. I think the little bees have carried the blight to the tree this year. This makes the matter so plain to my mind that I believe he has solved the problem.

Miss Cairns (Wis.): I did not understand clearly when he advised pruning for blight?

Prof. Robertson: At the time when the blight appears for the first time. When you are going through the orchard in the fall, when the active work stops in the fall and the leaves are still on the trees, you can see a distinct dividing line between the diseased and the healthy parts, and you want to cut out everything. At any time we find a blighted branch it should be removed, and the cut should be protected.

LATEST EXPERIENCE WITH THE RARER CONIFERS.

A. NORBY, MADISON, S. D.

Most any evergreen is rare in some communities, although nicely improved and well farmed. This is the case not only in our section of the country but in other states as well. A minister wrote me from Ruthven, Iowa, that he had never known the red cedar to have been tried in that vicinity and states that he has lived there twenty years.

The bull, or rock, pine (Pinus ponderosa var. scopulorum), yet little known in many places, is the only pine native of our state and Nebraska. As a drouth resisting tree it is scarcely equaled. Stuck out in the tough prairie sod without any further care whatever it takes right hold, looks thrifty, makes a fair growth and seems determined to make sawlogs. Unlike the Scotch and jack pines, it does not lean over or look yellow, but grows erect and keeps its lively green color the year around.

The general experience is that the bull pine is hard to transplant, but of late we have had very good success both in moving it in the nursery and when set in the final plantation. It wants to be moved in the spring before the new growth is much started, and to be frequently transplanted or root pruned. I suppose it makes some difference on what soil it grows; ours is a fine mellow loam, very favorable for the development of fibrous roots.

The western white pine (Pinus flexilis) has not been on trial more than four years, but has so far not shown any weak points. It is one of the prettiest of pines and promising.

Among tree men the idea prevails that the red pine (Pinus resinosa) is better adapted to dry soils and trying situations than the white. While this may be true in some sections, it is not so with me. If I were to choose between the two, I would prefer the white; still neither one is strictly reliable with us, but when the white pine is at home I fail to see any reason for planting other species except for variety.

The Colorado blue, or silver, spruce is a very desirable tree every way—remarkably hardy and well adapted to the conditions of the

northwestern prairies. It is also a better grower than the Englemann and Black Hills spruce, while for beauty and ornamental value the best silvery specimens stand well at the head of the list of hardy conifers.

Pinus Ponderosa at A. Norby's place.

The Black Hills spruce varies mainly from the common white in being more dense and of slower growth, leaves shorter and tree hardier. It is of value for ornament.

In the Douglas spruce we have a tree of considerable promise as transplanted from the east slope of the Rockies or raised from Colorado seeds here at home. I have found trees raised from eastern grown seedlings too tender, and I have tried them repeatedly. The

Douglas spruce has the reputation of being a rapid grower, but with us it will not keep up with the white (and I think also the Colorado blue spruce) the first fifteen years anyway; after that time it may outgrow them both. The Douglas is a symmetrical, handsome tree, taking on a graceful form and deserves a place in every collection.

The silver fir (Abies concolor) is not very hardy when young, but as it gets up from the ground it stands very well in sheltered sites and is certainly of high ornamental value. It grows quite slow when small.

One tree I obtained under the name of Abies subalpina, but which answers more closely to the description of Abies balsama of

Residence of A. Norby, Madison, S. D.

the Rocky Mountains, has proved hardy and decidedly prettier than the eastern balsam fir.

The silver cedar might also be classed with the rarer evergreens. In point of ornament it is superior to the common form; otherwise there is no noticable difference.

Mr. A. Brackett: What varieties would you plant on the western prairies if you were restricted to but two varieties of evergreens?

Mr. Norby: I would plant the ponderosa pine and the blue spruce. I hate to leave out the red cedar, but if I had to make a choice those would be the two.

Mr. C. S. Harrison: You have not mentioned the silver cedar.

Mr. Norby: That is quite a nice tree, but there is generally not much difference except in the color.

Rocky Mountain Balsam (Abies balsama) at A. Norby's.

Mr. Harrison: You have to select them as you do the pungens. They are not all silver.

Mr. Norby: No, that is true.

ANNUAL ADDRESS, 1903, PRESIDENT MINNESOTA FORESTRY ASSOCIATION.

CHAS M. LORING, MINNEAPOLIS.

Members of the State Forestry Association:

Custom seems to have created a law that your president shall make an address at each annual meeting. It is now my pleasure to perform this duty. First, I wish to thank you for the interest you have always taken in the objects for which this association was organized and for your courtesy to its presiding officer.

I wish it were in my power to congratulate you upon the completion or even the progress of some noted undertaking, but the want of funds has prevented all but advisory work. I can report, however, that in my judgment we leave each annual convention with some new ideas derived from the experience of our associates and with a stronger desire to do something toward the "encouragement and promotion of practical forestry."

The most interesting proof of the interest that the people of the state are taking in this work is the increased number of fine groves of timber which surround the farm buildings on the prairies. These groves add much to the comfort and pleasure of their owners and are ornaments much appreciated by the traveling public. There are yet many farms, however, without a tree to shade the buildings or a shrub to ornament the grounds about the house. It is the province of this association to encourage and aid in this much needed improvement.

In August last we were honored by the American Forestry Association which held its summer meeting in Minneapolis. At this meeting a great many valuable and interesting papers were read, notably by Dr. C. Alvin Schenk on "Financial Results at Biltmore," proving conclusively that forestry can be made profitable by individuals. Mr. G. L. Clothier's paper on "The Planting on Minnesota Prairies" is a valuable document to be in the hands of our prairie farmers. "Possibilities of Reforestation in the White Pine Belt" contains much that would interest settlers who are making farms on the cut-over lands of the state. Prof. S. B. Green, of our Agricultural College, gave an interesting paper on "Forestry Courses in Agricultural Colleges," in which he gave facts and valuable information from the educator's standpoint. One of the best papers of the session was by Mr. Herman H. Chapman, of Minnesota, on "The Effect of the Chippewa Forest Reserve on the Locality." The meeting closed with an address by the Hon. James Wilson, Secretary of Agriculture, which was listened to by a large audience. Secretary Wilson gave a very interesting account of the work that is being

done in his department for improving every branch of horticulture and agriculture.

The report of this meeting will soon be published, and it seems to me that it will be of interest to a large number of our members. If there are those who would wish it, if they will leave their names with the secretary, it will be mailed to them. While this report will relate chiefly to general forestry there will be much information of value to the farmer.

Within the past ten years much attention has been given to the planting of roadside trees. The state of Massachusetts passed an act providing for the planting and care of trees which makes it obligatory on the electors to elect a tree warden who shall have the care and control of all public shade trees in the town, except those in the care of park commissioners. It provides for severe penalties for the injury or destruction of roadside trees, whether they are growing naturally or were planted. Towns may appropriate annually a sum of money, not exceeding fifty cents for each voter, to be expended by the tree warden in planting trees on the public roads.

New Hampshire has similar laws which declare all trees in the highways to be public property under the care and supervision of the tree warden.

Connecticut pays a bounty of ten cents for every tree planted and protected on the highway, the distance to be sixty feet apart. No tree can be removed without the consent of the tree warden.

The Pennsylvania law provides that "Any person liable to road tax who shall transplant to side of road on his own premises any fruit, shade or forest trees of suitable size shall be allowed on road tax one dollar for every two trees set out. No row of elms to be placed nearer than seventy feet, and no row of maples or other forest trees nearer than fifty feet. All must be living and protected from animals."

New Jersey, Ohio and Florida have similar laws for encouraging tree-planting on highways.

California and Minnesota have laws providing for planting trees on the streets in cities and villages, but not on country roads. I recommend that a resolution be adopted by this association requesting the state legislature to pass an act providing for planting trees on the highways in the state, the trees to be not less than sixty feet apart and not less than fifteen feet from the property line.

MARKETING FRUIT.

LEVI LONGFELLOW, MINNEAPOLIS.

(A Talk.)

While I probably planted the first peach tree in Minnesota I am not a practical horticulturist, but I know something about getting the stuff into the hands of the people who eat it, and one of the essential things is to have it in good shape, honestly packed, so there will be no complaint. As an illustration of the trouble caused by not observing this rule I want to tell you of an occurrence that happened a few days ago. We got in a car of apples the other day, and they looked very fine. We shipped them into the country, where a man peddled them out to the merchants. He called them to the station, where they saw the fruit; they were pleased with it, bought it and paid for it. Now we are getting complaints right along about that car of fruit. The barrels had the traditional half bushel of good fruit on top, and the balance was inferior. Nothing discourages the merchant so much or disgusts the customer so much as to get a package of fruit in the house that is not as good as it looks to be. They have tried to legislate against dishonest packing in Canada, but with not very satisfactory results as yet. The inspector looks at a few packages, and then they go through, and when they get across the water they get into trouble. There is nothing that helps to sell ordinary kinds of fruit like a good package, provided it has a good top and bottom. But that is difficult to practice. You put a bushel of potatoes in the wagon, and the little ones will shake down to the bottom and the big ones will come on top. (Laughter.)

There is one disadvantage under which we are laboring in Minnesota: we are so widely scattered that we cannot have that uniformity of action and that co-operation that they have in the eastern states and in California and Oregon. There every community is in the same line of business, and they can get together and form organizations, and there is a man hired to inspect their stuff without opposition. You know how it was when we started our creameries in this state. A man furnished milk that was worth 25 to 40 per cent more than his neighbor's, yet he received the same price, but now every man gets paid for the full value of the cream he furnishes. So in the communities where they grow fruit they have a secretary to look after the business during the fruiting and marketing season, and he sees that justice is done to the growers as well as to the consumers. If I go to mar-

ket with a bushel of potatoes that are inferior and my neighbor takes a good bushel of potatoes, he is compelled to take less for his potatoes simply because I have established the price with my poor potatoes, whereas, if we were working together through one central organization we could get more money and better results all round and everybody would be better satisfied. Last winter our committee got a bill into the hands of the legislature, but it was held up by some of my friends, and the first thing I knew I was placed on a committee to go down to the legislature and protest against those packages. Of course, I declined to serve. I stand for the best package you can get.

You can only arrive at an understanding by discovering what your customer wants. I take it this business is not all for pleasure. There is pleasure in it, of course, but the main business is the dollar, and if you get your produce into the hands of the consumer the way he wants it you will please him and you will make money, and both will be satisfied. That, I take it, is your object in trying to raise fruit. There is some pleasure in it, in fact, a great deal of pleasure, but from a commercial standpoint you want to grow what the people want and that for which they will pay the largest price. One or two associations out here at the lake have demonstrated that the way to sell fruit, small fruit, is through an organization. I simply urge that you adopt a uniform package and that you reject old and second hand packages. We got in an order the other day for second hand butter tubs. I cannot imagine what a man can be thinking of who would use a second hand package for butter. What we want is the best, the sweetest and the cleanest package, and we want it for our fruit. (Applause.)

THE BETA GRAPE.

Mr. Tiegland: Is the Beta grape hardy enough to stand without protection?

The Chairman: The Beta is the hardiest grape I know of. It has stood on a trellis at our place for three or four years without any injury, while the other varieties were severely injured. That same Beta grape has stood on a wire fence on Mr. Peterson's place at Waconia for many years without injury. It is a grape of inferior quality, but very productive, very hardy, and the only reason I recommend it is because it is a good farmer's grape, and it is good for general planting. It is fairly good for eating out of hand, and a hungry boy will eat lots of them.

Mr. Pendergast: Is it as hardy as the Clinton?

The Chairman: I think it is hardier, and the flavor is far better. I think it is an improvement over the Clinton and the Janesville.

MORE ABOUT PYRUS BACCATA AS A SEEDLING STOCK.

PROF. N. E. HANSEN, BROOKINGS, S. D.

The following letters should be read in connection with my article on pyrus baccata published in the May "Horticulturist."

Mr. Roy Underwood of Lake City, Minnesota, writes under date of November 16th, 1903, as follows: "Replying to your favor of the 13th. We have had but little experience with the true pyrus baccata, and so are not in a position to give you any information. We have grown quite a good many apple stocks from the common Siberian crab, the characteristics of which we understand resemble the pyrus baccata and, so far as we have been able to determine, they have no marks of superiority over stock grown from other crabs, such as Early Strawberry, Martha, etc. We have planted seed from the Orange crab quite extensively, having a number of large orchard trees, and we are very much pleased with results. They make fine, vigorous seedlings and unite well in grafting. Our men seem to think that there is not much difference between the nursery trees that are grafted on native apple roots, grown from our common orchard trees, such as Duchess, Wealthy, and those grafted on crab roots, but it is probable that our experiments along this line have not been extensive enough in period of time to give us a safe basis for judgment. This, however, is off from the point on which you desired information."

Mr. Clarence Wedge, of Albert Lea, Minnesota, writes as follows under date of November 16th, 1903: "In reply to your request for experience with pyrus baccata would say: I have some trees, perhaps 200, of several of our standard sorts, crown-grafted in spring of 1901 on one-year seedlings of the common little Yellow Siberian crab, that now have three years' growth in the nursery. Almost uniformly they appear to have made a smooth union and to have a good root system. They have not made quite as good a growth as we commonly get on trees of that age, but this may be due to location.

"In spring of 1902 we set out about a thousand seedlings that we had grown from seed sent out by the government, said to have been secured from the native pyrus baccata of northeastern Russia. We put out these little seedlings in the vacancies in a long row of yearling apple root-grafts of the previous season's planting which had made an extremely poor stand. As it happened the snow blew off the portion of the nursery through which this mixed row was planted, and we were much interested to observe that while the root-grafted

trees, in common with all others of the same kind in this part of the nursery, had suffered very severely by root-killing not one of these seedlings showed the least injury, and all made a fair growth the past season. This is surely very good evidence of the great root-hardiness of the pure pyrus baccata.

"Scions of Prof. Green's type of this species, top-worked on several worthless varieties of apple four years ago have fruited quite generally with us the past season."

Mr. Wedge's reference to Prof. Green's type of this species means trees received from Arnold Arboretum, of Harvard University, which originally came from the Imperial Botanic Gardens at St. Petersburg, Russia, and then again originally from Siberia. The source of the old Yellow Siberian and Cherry crabs it would be difficult to trace at this time, but the Botanic Gardens at St. Petersburg must be credited with all or nearly all the early importations from Siberia. The pyrus baccata trees I noticed in these gardens while in St. Petersburg in 1897 varied greatly in size of fruit and other characteristics.

INFLUENCE OF THE CHIPPEWA FOREST RESERVE ON THE LOCALITY.

HERMAN H. CHAPMAN, GRAND RAPIDS.

Supt. of North East Experiment Farm.

(Delivered before the American Forestry Association at Minneapolis, Minn., August 25, 1903.)

The Morris Bill has set aside 225,000 acres of land in the Chippewa Reservation for a forest reserve. The questions raised as to the advisability of such action hinge largely on a single point, is the land agricultural or not? The writer does not claim absolute authority on this point, but having been engaged since 1898 in studying the subject in connection with the work of the State Experiment Farm at Grand Rapids he may safely hazard an opinion, which may be taken as being free from prejudice and perhaps as worthy of acceptance as that of those whose ideas might be influenced by their personal interests.

Agricultural land is land the quality or location of which is such that the farmers can clear and operate it with profit, i. e., make a living on it. The personality of the farmer must first be eliminated from the discussion. Perhaps not one in three farmers of today could start in on a timbered farm, no matter how good the soil, and succeed at all. Some classes of foreigners can make a living on a prospect much poorer than an American could

tackle, because of their lower standard of wants and greater economy of labor, the whole family contributing their efforts to the farm work. But granted that the farmer in question is of a type calculated to make the best use of the conditions which confront him, what kind of soil must he have in order that his presence and activity may be a benefit and not a detriment to the community?

This cannot be decided off hand. The main source of error comes from considering transient conditions as permanent conditions. A sandy soil, newly cleared and given plenty of moisture will produce the most astonishing crops of grain, grass and especially of garden vegetables. This same soil cropped for a few years may soon fall below the point of profitable production of field crop, even in a rainy season, while in a dry season it might give a complete failure. Sand if it receives abundant supplies of manure and water produces abundantly, for the processes of soil disintegration and the circulation of air and water in the soil are rapid on account of its loose texture, and if the source of fertility is supplied artificially it is rapidly made available for the plant. These conditions apply to a vegetable garden near town, which usually receives fertilizers, and it is a great error to judge the productiveness of a region by the size and quality of the vegetables grown on these sandy gardens. They are indisputably fine, but are not a safe index. This very capacity for rapid elaboration of soil fertility is the cause of the exhaustion of sandy soils under any system of cropping which does not constantly supply these elements artificially. Newly cleared sandy land is extremely fertile, for the timber and brush do not exhaust it and a certain amount of accumulated fertility exists which on the exposure of the soil by clearing and breaking is made available and used up rapidly. If then the system of farming is such that artificial fertilizers may be had in abundance, the lands may be kept in productive condition. The practice of such a system is possible only near markets where truck farming pays and manure can be hauled. Thus, then, land close to a town may by its locality be considered agricultural, even if it is sandy.

Again, all sandy land is not poor land. Sand underlaid by a heavier soil, or a sandy soil mixed with a fair proportion of clay, may be farmed with profit in certain localities by raising potatoes and clover hay. The clover, by the addition of the atmospheric nitrogen to the soil, and especially by plowing the clover under, thus increasing the humus content, is a powerful

agent for the maintenance of fertility on such soils in the absence of manure.

There is very little land in northeastern Minnesota, with the exception of certain areas of stiff, cold clay, that is not sandy, and to condemn the whole of such a vast area because of the presence of sand would be an economic absurdity. But to claim that all of this sandy area can be profitably farmed is an absurdity just as palpable.

What, then, is to be the standard by which the permanent agricultural quality of land not near to markets is to be judged?

Norway Pine reproduction in opening.

Long, abundant and sometimes bitter experience points out the wisdom of accepting the evidence of nature, the same evidence which our ancestors, before the days of lumbering, regarded as conclusive—the kind and quality of the virgin timber growing upon the land. Hardwoods require a fertile, lasting soil and are proof that such exists, no matter what the surface indicates. Pine grows upon sand, but, in Minnesota at least, the white pine has the reputation of thriving only when the roots can penetrate a soil containing some clay. Norway pine and jack pine are practically alike in their soil requirements and are naturally found as virgin timber on a sandy soil, underlaid by a sandy subsoil, extending to a considerable, sometimes an unknown

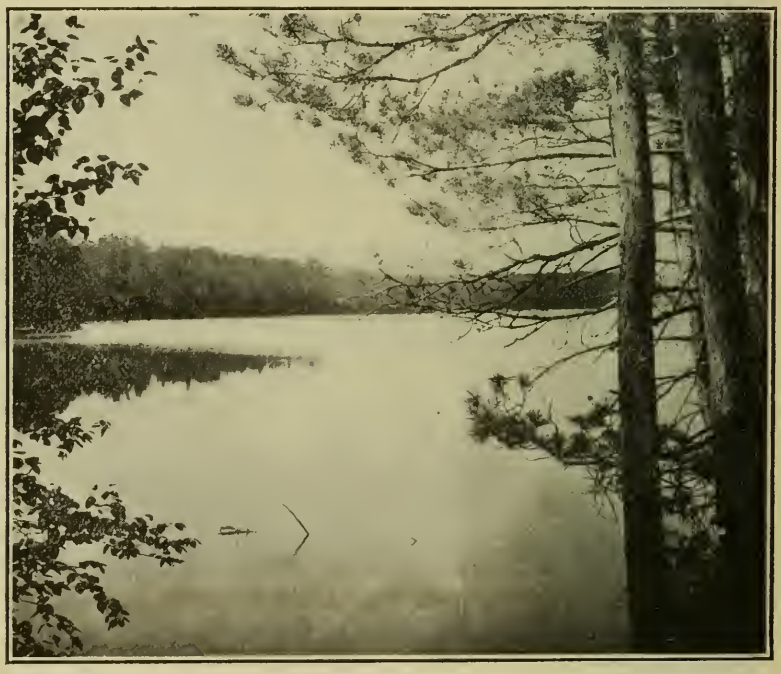
depth. Where jack or Norway are found in pure stands, without poplar or other hardwoods or white pine, it is an almost infallible indication of the presence of a sandy subsoil and of unfitness for permanent farm land. This statement is so far reaching and so apt to arouse vigorous opposition that it should not rest on the mere assertion. Neither will experience in Minnesota count for much, because of the comparatively short time such soils have been attempted. But in Michigan and Wisconsin this is no new problem, and the evidence is all one way. The farmer who settles on jack or Norway pine soil spends his accumulated savings, goes broke and pulls out, sooner or later, to seek a fresh opening under more favorable conditions, leaving his improvements behind to tempt some other unfortunate to repeat the experiment. This inexorable law of nature, the survival of the fittest, is daily proving the unfitness of jack pine sand for farmers, but at the expense of untold cases of ruined homes, broken health and spirits, and clouded family prospects. The throbbing activity of a land boom and an influx of settlers into a hitherto undeveloped community may for a time avert this result, but with the resumption of settled conditions, crop failures and discouragement soon force the facts to the front. For those who sneer at this statement I could wish no worse fate than to condemn them to earn a living on the "farm land" they have sold to poor but honest settlers with families to support; and any federal policy which permits misinformed foreigners or others to homestead such land is false and should be rigorously condemned. Yet it must not be lost sight of that these remarks apply in their fulness only to jack and Norway pine sands. The conditions of clearing and farming other classes of soil, even sands, not of this type, are difficult, due to the cost of clearing, but are not impossible.

Farmers on jack pine sands, except a few truck gardeners near town, are of no benefit to a community in the end, though they may create activity at first and stimulate trade until their surplus is spent. Merchants cannot deal profitably with customers who are unable to pay, though they can certainly trade with them as much as they desire if that is their object.

The Morris law provided that 225,000 acres of the 600,000 acres on the Chippewa Reservation, about Cass Lake, be held as a forest reserve, allowing, however, almost complete removal of the pine. The objections urged, therefore, are founded largely on the supposed bad effect of preventing settlement on this land. These depend for their validity upon the character of the land

reserved, for no fair-minded person will, after thorough investigation, dispute the facts set forth above.

At present, a little less than half the area has been designated. The land to the north and west of the town of Cass Lake, south of the Mississippi River, is not to be reserved, thus allowing the town an outlet and area for truck farming. Almost the entire area chosen, which lies east and south of Cass Lake, is solid Norway and jack pine land. In the southwest corner of the tract are a few small patches of hardwood. Elsewhere one would find great difficulty in selecting more than eighty acres of land in



View from lake shore.

any one place without including jack pine sand. There are hardwood tracts on the reservation, but they lie south of Leech Lake and east and north of the proposed ultimate boundaries of the selected area, within which there is still far more Norway and jack pine land than will be needed to complete the selection. It is the ultimate judgment of the writer that prevention of settlement on this area is itself a distinct benefit to the locality.

Land which is not fit for farming can still grow trees, yet so slow is the process that individuals cannot be expected to go into the business. State governments may do something, but

their policy is apt to be too directly influenced by politics to be sufficiently permanent for results. For instance, it can easily be seen how a loud and continuous demand that this forest reserve be opened to settlement would, if state politics had control of it, be apt to succeed and allow the ruinous experiment to be tried, when it would then be too late to re-acquire the land for a reserve. National policy is more permanent and more far seeing, less apt to be swayed by gusts of selfish shortsightedness, and is the only control under which results in forest growing can be hoped for commensurate with the effort put forth.

The cutting of all but five per cent of the pine on this land will destroy the scenery on the area cut, but it will create the most favorable conditions for a second growth of Norway pine, which the five per cent of seed trees and protection from fire will render possible. Should the possibilities of the reserve be developed to the utmost, it will make this section a continuous producer of lumber fifty to 100 years from now, with no doubt of a ready market. But this dim and distant benefit pales beside the prospect of an immediate advantage of great significance, the foundation for which lies in the so-called "Park" clause of the Morris bill. Under this clause, besides certain islands in Cass and Leech lakes, which unfortunately are marred by Indian allotments, ten sections of pine land have been set aside for the public. The selection of this land, left to the Bureau of Forestry, has been made so as to secure a continuous unbroken strip of shore line on Cass Lake, twenty miles long, including the whole of Pike bay, while a dip to the south takes in four beautiful and secluded smaller lakes, increasing the shore line to over thirty miles. Stately groves of Norway cover nearly the whole extent of these shores and make a park for tourists and campers unexcelled for beauty, whose national fame is only a brief matter of time and acquaintance. For this is the last of the Norway—not that it is all cut, but nowhere else are standing groves accessible, and what is left is owned by lumbermen and will inevitably be logged. The park stands as a monument to the most beautiful of eastern pines. Ten sections out of the 1,000 sections on the reservations, or about one per cent of the area, three per cent including the islands and points specified with their allotments, is the modest area of this park, yet it is worth as much to the locality as if it were ten times as large.

We in northern Minnesota have yet to learn the tremendous volume of the summer tourist business, the underlying sentiment of which goes deep into the heart springs of humanity—the

longing for fresh air, freedom, and nature. This movement continually increases in strength. In New York it has caused the state to acquire 1,200,000 acres in the Adirondacks for public use, at great expense, a single appropriation of $1,000,000 being made in one year for this purpose. Already the accommodations at Walker, on Leech Lake, are stretched beyond their capacity. Thousands come from Chicago and St. Louis every summer to Minnesota, and other thousands will come, and this park with its pine will become the Mecca of these fresh air pilgrims, just as fast as they learn about it and can be sure of their accommodations.

Does any sane man doubt the truth of these assertions? Leech Lake is completely surrounded by Indian allotments, except for a few scattered forties, and the park lands are therefore selected about Cass Lake. It is confidently predicted that the park, small as it is, will prove a source of permanent revenue and prosperity to the region.

FRUITS IN MANITOBA.

D. W. BUCHANAN, WINNIPEG.

Strawberries can be grown with good results in Manitoba, notwithstanding statements often made to the contrary. Great care, however, is necessary to provide against spring drouth. By heavy winter mulching, after the ground has been frozen quite hard, and leaving the cover on as late as possible in the spring, and then only removing sufficient to permit the plant to grow through, leaving spaces between rows well covered, the moisture is retained in the ground. The plants are by this process retarded in the early part of the season and come on faster when they do get a start, thus lessening the danger from spring frost. Last season was about as unfavorable in the Red River Valley section of Manitoba as it well could be, owing to prolonged drouth, but we nevertheless had a fair crop of berries from the old rows, which stood the drouth better than the looser soil of the newer planting of the previous year.

Raspberries were a good crop all around—better than the wet season of 1902—with constant surface cultivation or heavy mulching between rows—I tried both plans. Turner and Philadelphia (red) and Caroline (yellow) produced a good crop without cover.

Currants and gooseberries were a fine crop. Of the latter Houghton is hardy and Downing and Smith's Improved fairly hardy without cover, in protected locations.

De Soto plums were frozen on the trees, quite green, on Sept. 14th. Trees are hardy, but fruit too late in ripening for Manitoba. The Aitkin is the only plum I know of which is safe here. It was ripe with me about Sept. 1st.

Summer Meeting,

OF THE

Minnesota State Horticultural Society,

1904.

"I assure the association through you that the entire staff will co-operate in helping to make it a pleasant and successful day."—Happy words from Dean W. M. Liggett.

The regular summer gathering of the society will be held as usual this year at the State Experiment Station, at St. Anthony Park, on Friday, the 24th day of June. This date is set to accommodate the strawberry and rose growers in the part of the state most accessible to the place of meeting. Bring whatever you have for exhibition, if only one article. More rose growers should take part in this display. The usual liberal premium list has been prepared.

The order of exercises for the day will not differ materially from that of similar occasions in previous years. The forenoon will give ample opportunity to those so inclined to look over the experiment gardens and orchards and observe the changes and progress in the work there, and the professors and their assistants will be in attendance to explain its character. Prof. F. L. Washburn will give a demonstration with a "spraying outfit and cart" which he has had constructed.

At 12.30 o'clock basket lunch (for members of the society and adult members of their families) will be spread in Armory Hall, and all attending are expected to contribute toward this festive occasion. Every one is welcome, and if not a member of the society, $1.00 (paid to the secretary) will make you such and give you the publications of the society and a voice in its deliberations.

At 2 o'clock the regular summer session of the society will be held. The program will include:

1. Reports from the Fruit Exhibit at the World's Fair from persons who have been there.

2. "Practical talks" from the exhibitors of fruits, etc., at the meeting, using the articles exhibited as texts to talk from.

3. "A practical thought" on some horticultural subject from members present, as called upon by the presiding officer or any other member present. Bring at least one useful thought, from experience or observation, to this meeting, and don't think to get away without giving the society the benefit of it. This, as you see, is to be an impromptu program, and we expect it to be an unusually interesting one.

Are there any questions you would like answered? Bring them along and drop into the Question Box.

Remember that the social feature is especially emphasized, and don't forget to bring along your wife or husband, as the case may be.

HOW TO REACH THE GROUNDS.

Take the Como-Interurban electric car in either St. Paul or Minneapolis and get off at Commonwealth Avenue, where carriages will be found waiting

to carry the visitors to the grounds, one-half mile distant, from 9:30 a. m. to 1:30 p. m. Those who drive over in their own conveyances will find ample accommodations on the grounds for stabling.

Do NOT take the Interurban car, but TAKE the Como-Interurban-Harriet car.

CLARENCE WEDGE,
President, Albert Lea.

A. W. LATHAM, Secretary,
207 Kasota Block, Minneapolis.

PREMIUM LIST.

All exhibits must be entered with the secretary and in place by 11:30 a. m. to be entitled to compete for premiums. N. B.—This rule will be enforced literally.

Exhibitors competing must be members of this society, and the growers of the articles exhibited, which must have been grown in Minnesota and be correctly labeled.

Fruits and flowers shown become the property of the association and will be used at the mid-day lunch.

At the afternoon session exhibitors, in all classes, will be called upon to talk about the article exhibited, describing them, giving methods of cultivation, etc., using the articles themselves as object lessons.

FLOWERS.

Bring out the Flowers.

	1st prem.	2d prem.	2d prem.
Each named variety of out-door roses, six blooms	$ .50	$ .25	
Each named variety of peonies, five blooms	.50	.25	
Bouquet of garden flowers	1.50	1.00	$ .50

STRAWBERRIES.

	1st prem.	2d prem.	3d prem.	4th prem.
Collection of strawberries	$5.00	$4.00	$3.00	$2.00
Each named variety of strawberries	.75	.50	.25	
Seedling strawberry never having received a premium from this society	3.00	2.00	1.00	

APPLES.

(Not kept in cold storage.)

	1st. prem.	2d prem.
Best plate of any named variety of apples (of average size and in good condition)	$1.00	$ .50
Plate of seedling apples	2.00	1.00

VEGETABLES.

	1st. prem.	2d prem.	3d prem.
Head lettuce, 4 heads	$1.00	$ .50	$ .25
Asparagus, 1 bundle	1.00	.50	.25
Peas in the pod, ½ peck	1.00	.50	.25
Rhubarb, 6 stalks	1.00	.50	.25
Early potatoes, ½ peck	1.00	.50	.25
Early beets, 6 specimens	1.00	.50	.25

Secretary's Corner.

BESSEMIANKA PEAR.—It is gratifying to hear from Mr. J. R. Cummins that this Russian variety of pears has come through the winter without any injury, the wood itself being bright and green and the trees full of blossoms. Other reports also have come into the office to this effect. If we have found a pear that will endure such a winter as the last was, that has seriously injured many half hardy trees, it may prove to be of practical value to us.

SUMMER MEETING, MISSOURI HORTICULTURAL SOCIETY.—The regular summer meeting of this society is to be held in Horticultural Hall, at the World's Fair, June 7th to 10th, one session each day. Pains have been taken evidently to make this in some sense a national meeting, as many of those on the program are from points outside of the state. We understand that our friend, Prof. R. S. Mackintosh, of Auburn, Ala., is to be there and probably many other acquaintances of whom we may hear later.

NOTICE OF SUMMER MEETING.—The attention of our readers is called to the notice of the summer meeting, to be held at the height of the strawberry season, at the State Experiment Station. Notwithstanding the injury to some strawberry beds in the state from the severe weather we are still expecting a large show of strawberries on that occassion, and we hope that every member attending will bring such varieties as he may have. A special request is made for flowers also. Roses are not represented anything like as they should should be at this meeting. Don't forget the time and come prepared to enjoy the gathering.

TWENTY THOUSAND ACRES FOR THE STATE FORESTRY BOARD.—Prof. S. B. Green and Gen'l C. C. Andrews, during the first two weeks of June, are to make a tour of northern Minnesota to select 20,000 acres of non-agricultural lands in that region to be set aside for re-forestation under the management of the State Forestry Board. There are large areas of such lands in different parts of the northern counties of the state, mainly in Itasca and and St. Louis counties. With a suitable appropriation from the state legislature the Forestry Board will be in a position another year to enter upon this most practical work, a work in which the national government is already doing a great amount in different parts of the country.

MINNESOTA FRUIT EXHIBIT A RENDEZVOUS.—Members of this society and other friends must not forget that the Minnesota Fruit Exhibit in the Horticultural Building at St. Louis is their natural rallying place when visiting the fair. Call upon Mr. Redpath, who is in charge there, and he will give you a cordial welcome and invite you to make yourself at home with the conveniences that have been provided—and don't forget to register, as we like to keep a full record of all our friends visiting the exhibit.

Our old friend, A. W. Sias, suggests that there shall be a rally of "Northwestern Fruit Cranks" at our exhibit in St. Louis on October 4th next, the 38th anniversary of the Minnesota State Horticultural Society. Probably he expects to be there at that time himself.

FRUIT FOR THE WORLD'S FAIR.—A good many replies have come in to the secretary from the circular sent out to the members of the society giving an opportunity for contributions of fruit to the World's Fair, but there are still a good many to be received from those we are sure have a sufficient interest in this display and want to participate in it. Most of these are waiting apparently until the season is sufficiently advanced so they can know exactly what they can contribute. It would be more convenient for the secretary as superintendent of the fruit exhibit to know approximately at this time than to wait until the last moment and know exactly. It is hard to make calculations upon such a basis. Fill in the circulars with what you are likely to have and also give the secretary the list of what you have growing, as provided for on the other side of the sheet.

W. L. TAYLOR AND THE FRUIT EXHIBIT.—Mr. W. L. Taylor, of Howard Lake, in writing me under date of May 19th, from the Minnesota Fruit Exhibit, at the World's Fair, says, "It seems to be the general impression that we have the prettiest exhibit in the hall. Here are a few expressions about it": "O, how beautiful!" "Isn't that just too lovely for anything!" 'Your installation is grand, beautiful." "While not so large as some I would pronounce it the prettiest of all." (H. M. Levering, Master in Chancery, Pittsburg, Ill.) "The Minnesota exhibit is perfectly lovely. It makes me proud of my native state." Mrs. Winston, daughter of Col. John H. Stevens.) "Your exhibit is perfect. That idea of keeping those summer apples under glass, where they can be seen and yet in cold storage, is excellent." (E. B. Regall, Georgia.)

APPLE DAY AT THE ST. LOUIS EXPOSITION.—John T. Stinson, superintendant of pomology at the World's Fair, has established a novel precedent in the setting aside of an "Apple Day," which is to be noted for the special recognition to be given on that day to the apple, not only in the matter of display but by distributing them freely to the public. Sept. 27th is the time decided upon, and on that day visitors in Horticultural Hall will be invited to partake freely of the finest apples in the world. Minnesota as a participant on this occasion should have on hand for distribution a large quantity of big red Wealthys. No one grows a better apple than this, and the fame of Minnesota as an apple growing state is to be well sustained by the distribution of this luscious variety. Who among the Minnesota growers will contribute towards this special event? We need fifty bushels.

ANOTHER WORD FROM MR. TAYLOR, AT ST. LOUIS.—In a letter dated May 21st, Mr. Taylor, who is with the fruit exhibit at St. Louis, says, "The Anisim is making a record for standing up well. After being on the shelves for three weeks they are sound and look fine." (These Anisims came from Clarence Wedge and were put on the shelves at the opening of the fair. I overlooked speaking of them in the account which appears as the first article in this number.) "The University ought to come off Monday or the middle of the week." (The apples of this variety referred to have been on the shelves since April 29th.) Mr. Taylor makes further quotation from those who see the exhibit as follows: "Minnesota is doing as well as any of the states in the fruit line and better than the majority. "I didn't know Minnesota could raise such apples. I am surprised." "This is all right." (An Arkansas editor.) "Minnesota is all right in the fruit line."

THE WEALTHY IN COLD STORAGE.—Wealthy apples taken out of cold storage in Minneapolis May 19th show up beautifully. Some other varieties are also looking well, but the Wealthy seems to be the best keeper, at least we have a larger quantity of this variety than any other so that we can form a safer judgement in regard to it. These Wealthys are all wrapped, each apple in a wax paper and then in tissue paper and packed closely in bushel boxes. In the boxes opened not a single injured speciman was found, and there seems to be no reason why they should not keep in good condition until apples come again in August. If we can save fruit in this way for the World's Fair we can also save it for our own table use, and the writer intends to put into cold storage next fall enough Wealthys in bushel boxes, packed in this way, so that they can be taken out for family use every two weeks throughout the spring and summer months. This is an experiment well worth trying by all lovers of the fruit who are in a position to make it.

STRAWBERRIES AND ROSES AT THE SUMMER MEETING.—Special attention is called to the premiums offered on these two classes of exhibits at the summer meeting. The Missouri State Horticultural Society at its summer meeting, to be held in the Horticultural Building, at the World's Fair, the 7th to 10th of June, as a special inducement to secure a good exhibit of strawberries from that section have offered $150.00. Our society paid out nearly that amount at its summer meeting alone last year and is prepared to do so again this year, and we hope to have the opportunity. The prospects are that the berry crop will not be as large as last year, but there being fewer on the vines what are grown may be better. We are very desirous of having as fine an exhibit as we had last year. Let every member attending bring such varieties as he has—and don't forget the roses! Not enough of these beautiful flowers are brought to our meetings. There should be twice the extent of the exhibit of this flower that has been made heretofore.

GETTING ACQUAINTED WITH TREES.—This is the title of a book a copy of which lies on my desk, written by Mr. J. Horace McFarland and published by the Outlook Company, N. Y. It is an elegant appearing volume of something over 200 pages printed on heavy paper with wide margin and profusely illustrated with highly finished half-tone engravings. The top edge of the book is gilt, and its dimensions are 6 x 9 inches. As the writer says in the preface, "These sketches, I fear, are very unscientific and unsystematic." The book contains a chapter on maples, others on oaks, pines, apples, willows, etc., winding up with one entitled, "Some Other Trees." The book is intended to increase one's love and interest for the commoner varieties of trees with which after all many of us are not intimately acquainted, and the purpose seems to be well expressed in the closing words of the chapter on oaks. "These oak notes are not intended to be complete but only to suggest some points for investigation and appreciation to my fellows in the brotherhood." Price, $1.75, bound in cloth.

A PLEA FOR SOME OF OUR COMMON BIRDS.—Under this title Prof. F. L. Washburn, state entomologist, has issued a bulletin from the State Experiment Station giving valuable information in regard to a number of our common birds. This bulletin is the result of the action of a joint committee from the Horticultural Society and the State Educational Association and is intended for distribution among the teachers of the state and others. It is hoped to reach especially the young and teach them the value of birds and

deter them from killing them, assuming that it is ignorance rather than cruelty on the part of the thoughtless that is often to blame for their destruction. Among the birds described in this bulletin, giving the life habits, etc., are the Bluebird, Pewee, Barn Swallow, Meadow Lark, Chickadee, Downy Woodpecker and a number of other well known varieties. Any who are interested in helping on this movement can do so by securing copies of this bulletin from Prof. Washburn for local distribution. Address him at St. Anthony Park.

THE NEW STATE FAIR PREMIUM LIST.—Have you received a copy of this? If not and you are a grower of anything that may be shown and for which premiums are offered at the state fair, send at once to Secretary E. W. Randell, Hamline, Minn. for one. The premiums are liberal in all departments. In the horticultural department a few changes have been made from last year and the total amount offered slightly increased. Special interest in this department is grouped around the display of seedling fruits, apples and plums. If you have never exhibited at the state fair you will not find it a difficult thing to secure premiums enough to pay you well for your trouble. You have only to select nice fruit and get it to the fair in good condition and set it up nicely on display; in other words, you have only to do as well as you can the things to be done. It is the failure of many to do as well as this that accounts for lack of success. Plan to bring or send some fruit from your place to the fair this year. You will find the rules in reference to the horticultural department and the premiums offered commencing on page 74 of the premium list. The list is gotten up neatly in pocket size, that can be carried about very handily.

FRUIT PROSPECTS FOR 1901.—Brief notes are printed herewith from a number of fruit growers of the state, fairly well scattered over that portion of the state where fruit is most successful. It appears from these reports that the apple crop is to be rather a light one as well as quite uneven, some localities showing considerable fruit, and others not very much. It is apparent that there is little injury to apple trees except to some of the half hardy kinds. Strawberries were very generally injured more or less by the winter, but are coming out well and bid fair to produce a good yield, although a light one. Raspberries and blackberries where well covered are usually in good condition, where uncovered very little can be expected from them. The plum crop at the present writing is a promising one, trees having blossomed full, the weather being fairly favorable during the blossoming season. Taking everything into consideration the prospect is good for an average crop of everything except apples. Notes follow:

"Fruit trees and plants on my farm seem to be coming out as good as I ever saw them. Apple trees seem all right. Plum, cherry and other trees are looking well." D. S. Hall, Buffalo Lake, Renville Co., May 13.

"Prospects good for a crop of most kinds of fruits, including apples and plums. Past winter hard on trees and plants, but blooming period weather was favorable."—Dewain Cook, May 30, Jeffers, Cottonwood Co.

"Plums are setting the heaviest crop that I ever saw, and apples will be a fair crop in my orchard, but some of the orchards around here will not have one-fourth crop."—J. A. Howard, Hammond, Wabasha Co., May 28.

"Prospect is much better for strawberries etc., than I thought it would be two weeks ago, only they are just beginning to bloom and will be quite late." —B. T. Hoyt, St. Paul, May 28.

"Wealthy apples about one-fourth crop; Duchess, one-tenth; no winter apples. Plums will be a full crop."—Andrew Wilfert, Cleveland, La Sueur Co., May 31.

"Our apple and plum trees look very healthy and are going to bloom full; though we have had an extraordinary season, I do not think it affected fruits unfavorably in this vicinity." Alfred Terry, Slayton, Murray Co., May 13.

"Prospects of fruit on standard apple, plum and cherry trees, excellent. Plums are overloaded with buds. Crab apples will be below the average. Raspberries and blackberries in good shape. Strawberries not covered early badly injured by root-killing." A. B. Lyman, Excelsior, May 14.

"Prospect for the fruit this far is very favorable, better than I have known it for a number of years. If we don't have any frosts I thihk there will be an abundant crop of fruit of all varieties." William Oxford, Freeberg, Houston Co., May 14.

"Trees are apparently all right and so are strawberries. Plums are blossoming full. Have been examining some of the apple trees and find that very few of them have any blossom buds. Crab trees are full of buds." S. D. Richardson, Winnebago City, Faribault Co., May 13.

"No blossoms on apple trees except a few on Peerless, University and Duchess. No blossoms on crabs. Plums have bloom but not open. Will open in two or three days. Apple crop will be a total failure. Strawberry and raspberry plants look well." Martin Penning, Sleepy Eye, Brown Co., May 13.

"Our apple trees wintered well and promise a good crop. The plums promise a large crop; they are in full bloom. Raspberries wintered well, even uncovered where the snow drifted. All small fruit promises a good crop except blackberries." J. S. Jerabek, Silver Lake, McLeod Co., May 19.

"The prospect for an apple crop is rather slim in this locality. Some trees are quite full of bloom, but majority show up poorly. Plums are very promising. Strawberries almost a failure. Hardy raspberries, very good; tender varieties, dead."—Thomas E. Cashman, Owatonna, May 31.

"Raspberries, currants, blackberries and plums promise a first-class crop. Strawberries are picking up wonderfully, and a moderate crop of apples seems assured. In general the prospects are very flattering."—Clarence Wedge, Albert Lea, May 31.

"Apples promise well. Trees full of bloom. Plums are very well set. Strawberries look fine. Blackberries and raspberries where uncovered are are killed dead, and grapes also, but where properly covered are looking well."—O. M. Lord, Minnesota City, Winona Co., May 30.

"Plums promise fair, good in some varieties, poor in others. Apples a light crop. Strawberries good. Gooseberries killed back and currants poor. Raspberries killed back more than I expected. Some damage to apple trees, but I think they will outgrow it."—C. E. Older, Luverne, Rock Co., May 30.

"Outlook not good for fruit. Winter hard on some varieties. Scarcely any bloom on apple trees bearing heavily last year. Strawberries looking very well. Plums will be a fair crop."—Jewell Nursery Co., Lake City, May 25.

"Malinda, Longfield and Wealthy are in better shape than I had expected to see them. Crabs and the hardy apples have suffered the least. Wild plums are O. K. and some of the kinds that I bought. Compass Cherry trees look sick; they seem to look worse as the days go by."—A. T. McKibben, Ramey, Morrison Co., May 16.

"Wealthy bid fair to be one-third of a crop; Duchess, one-fifth; Whitney, same; Malinda bearing but little. I think now there will be a fairly good plum crop."—Seth H. Kenney, Waterville, Le Sueur Co., May 31.

"Everything went through the winter nicely and don't see a twig hurt on such trees as Anisim. Patten's Greening, Peter, Borovinca, Romna, Cross, Hibernal, Anisette, Duchess and several others, but Wealthy, Okabena, Peerless are cut back considerably. Crabs promise a good crop again this year."—Ole J. Hagen, Hendrum, Polk Co., May 14.

"Plum trees loaded with blossom buds and bloom. Some varieties of apples show fair amount of blossom buds. It is an off year here for most varieties of apples. Raspberries are an uncertain crop here any year. Canes seem to have stood the winter well." Hamlin V. Poore, Bird Island, Renville Co., May 13.

"Apple trees generally bloomed and have set most of the fruit. Plums also have more fruit set that may make a good quality. Strawberries are looking well, and with the amount of moisture now in the soil ought to make a large crop. Currants doing well, also raspberries which came through the winter well. The Russian mulberry was much injured.—John R. Cummins, Eden Prairie, Hennepin Co., June 1.

"Apple crop all right but think it will not be very heavy crop. Plums and cherries are setting good; currants good; strawberries will be good if the weather is favorable. No hardy trees in this section have been killed by hard winter. Taking everything in consideration should think we will have a average crop of all kinds of fruit."—B. E. St. John, Fairmont, Martin Co., May 31.

"Strawberries are coming out better than expected and will yield a small crop, but are very late, and picking will not begin for two weeks. Plums most all dropped. Apples blossomed and set for a good crop, but weather is too wet for spraying and not much good fruit expected. Grapes leaving out, and a few will fruit if season is long enough."—F. I. Harris, La Crescent, Houston Co., May 30.

Death of L. M. Ford.—A letter addressed to L. M. Ford, San Diego, Cal., has been returned to the writer bearing the word "Deceased." This is all that is known in regard to the death of Mr. Ford at the present writing. Mr. Ford was one of the pioneer members of this society, his name appearing upon the roll first in the year 1868. He was made an honorable life member in 1884. Some nineteen years ago he removed to San Diego, Cal., where he had since lived up to the date of his death. His wife died a few years ago, notice of her death appearing in our report for 1897. For a number of years past Mr. Ford was an invalid, as the result of a paralytic stroke, in which condition he had continued his business of raising cactus and growing some kinds of seeds for eastern seedmen, and judging by his letters, which had come to me with considerable frequency, he had led a useful and comparatively contented life. Mr. Ford was very prominent in the counsels of the society up to the time of his departure for the Pacific coast. As a pioneer nurserymen and florist in Minnesota and also as a horticultural writer for the "Pioneer Press" and by other similar services in an early day he has left his impress upon the fruit development of our state. We hope to be able to learn something further of Mr. Ford's life in California for a later issue. Our last letter to Mr. Ford was dated April 14th.

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APPLE STOCKS IN THE NORTHERN NURSERY.

ROY UNDERWOOD, LAKE CITY.

The nurserymen present will appreciate that this would be a large topic to handle in so short a time, at least so if all the pros and cons that would arise at a nurserymen's convention were to be dragged into the discussion. The propagation of apple trees is much like the care and cultivation of an apple orchard in that different individuals may work out the problem along different lines with the same approximate success, and, in the same manner, a grower may at times fall into the erroneous conclusion that his is the only successful method. So, in dealing with the subject, I shall endeavor to keep a hold on such generalities as may seem to be of the most accepted application.

Here in the north it has come to be a pretty generally accepted fact that in an apple tree a hardy root is quite as important as an early ripening tendency of wood and a tough quality of bark. A chain is only as strong as its weakest link, to follow the old adage, and an orchard tree that may be perfectly hardy above ground but that is grafted on a root of inferior hardiness, is a successful tree only so long as its root withstands the extremes of our climate. Such a tree will thrive until it meets with one of our test winters, accompanied by bare ground and protracted zero weather; then unless one is philosophical enough to enquire below the surface of things he is apt to condemn the variety when in fact he ought to "roast" the tree-man. Not that the latter often feels a lack of this generous warmth, either, but as a rule—and I say it with candor—it is frequently applied to him copiously when it is not merited, and again as often the planter fails to make him responsible when he really is.

Now I am not going to make apologies for the nurserymen; they are tough and can endure in dignified silence. Nor am I tempted to disclose many of the mysterious secrets that hover around the uncanny precincts of a modern nursery. But you have invited me to write this paper from the standpoint of a tree-man (I am proud of the distinction—really), and I trust that my brothers-in-adversity who are here will pardon me for thus making public the statement that the hold northern nurserymen have upon their patronage is largely due to the prevalent idea that nursery stock reared in the north is best suited to the rigors of this climate. It is probable that northern nurserymen do not let this idea smoulder for lack of blowing upon it (or about it). But seriously I think our claim that this idea is justly based on fact and not on fancy is well founded as far as the growers who really grow their trees is concerned; and it seems as though the claim would also apply to the growing of apple stocks, especially so as an example, because the apple tree is the foremost item in nearly every nursery's inventory and the successful apple tree is of the greatest comparative interest to the average horticulturist.

In the early days of American commercial horticulture, it is probable that the comparatively few apple trees grown by nurserymen were grafted on roots grown from seed produced in their own orchards; but the growing demand for trees in larger quantities subsequently rendered that source of supply inadequate, and the orchards of Europe were called upon to fill the need. It was then found that, probably on account of cheaper labor, both seed and grown stocks could be secured cheaper abroad than in this country, and I understand that many of the large wholesale nurseries in the milder portions of the United States still use a good many French and other foreign stocks. However, the large orchards in some of the older eastern states are now supplying an increasing percentage of the seed used by the American growers and especially by those who cater to the western and northern trade.

The more recent agitation that has arisen here in the west over the question of using Pyrus baccata stock to obtain hardier and better trees has, it seems, had considerable effect among our local growers, but the present scarcity of seed makes it yet impossible to conduct experiments on an extended scale. Still we do not think the effect of the agitation has been limited to that variety alone, as it seems to have brought to light for discussion and experiment the comparative merits of true crab seed and that of the commercial apple. Prior to the advocacy of this stock by Professor Hansen, we had given quite a little attention to growing stocks from various

crabs and apples in our orchards. A notable instance was the Orange crab. In one of our old orchards planted by Dr. Jewell were about a hundred large bearing trees of this variety, the Doctor being an early admirer of its quality. An especially large crop about ten years ago started us to using them for seedlings, and we found that almost without exception they produced the most vigorous roots of anything we were then using; and when grafted they produced trees that evidenced a similar uniformity in vigor, which

Was hing out crab seed in running water.

effect was especially noticeable with varieties known to be light root producers. This effect was, of course, not as easily traced with trees piece-grafted on short roots as in those crown-grafted in the field, where the whole root is used.

We have also found good results from other of our common crabs and hybrids, but to date our men seem to think the Orange has points of superiority. If one were going to raise crabs for the seed it would be impracticable to give much attention to the larger ones or those not naturally prolific in seed or, again, those that are shy bearers. With the nurseryman the question of quantity as well as that of quality must be considered, unfortunate as that may be. We have been a little afraid to use the Transcendent on account

of its tendency to blight, although in considering its use as a stock this may be a fear without foundation. Our most recent experiment has been with the Siberian crab, which we understand is nearly akin to the Pyrus baccata. So far as we have yet been able to determine, it has shown no marked superiority to the Orange, but we do not feel that our test has yet been of sufficient duration to give us a safe basis for judgment. Its small size, regular bearing and generally full quota of seeds would make it a good variety to grow for the purpose of securing seed.

There is one thing in this line we believe we are certain about, and that is this: for best results a root must be used that is vigorous enough to strike out strongly the first season after it is grafted. That is perhaps the most critical time in the life of the young tree, for if it is feeble on the approach of its first winter it is apt to come out in the spring with only enough vitality to dally through its second summer or succumb altogether. If this premise is correct, the obvious conclusion is that to determine the best apple stock for the northern grower we should first assemble the hardiest stocks on our list and then select from them the one showing the greatest amount of vital energy. In this way we may some day stumble on a stock of which we may conscientiously say, "there is none other better."

Difficult as it is to define the "best stock," it seems still more impossible to define the "best method of growing it." In looking over the propagation records of the Jewell Nursery Company I find very little assistance, at least of a well founded nature, on this branch of the subject. In our effort to determine the best way I find that a method which was dropped one season for a then apparent cause was likely to be again resumed at a subsequent time when for some good reason it would seem superior to the last tried method. For example, I find that several times within the past twenty years we have changed from fall sowing to spring sowing of seed and vice versa. An early and unexpected freeze-up was the cause on a number of occasions. At other times with apparently identical conditions, seed seemed to give a better stand when stratified and sown in the spring. In this connection it would scarcely be possible to say too much for the value of having your own source of seed supply. The climatic "hold-ups" to which we are exposed in spring and fall alike makes the question of having the seed on hand for prompt action a most important one. And also in this same line of thought I would suggest that our experimental horticulturists who have orchards of seedling varieties many of which may not have sufficiently strong market qualities to make them profitable ought to make a good margin by converting them into cider and vinegar and

incidentally selling the seed to northern nurserymen. Good New York seed brings from $7.00 to $10.00 per bushel, and native Minnesota seed would bring a good deal more. The necessary mill, press, etc., are inexpensive, and with a little practice we have found from our own experience that first class cider and vinegar may be made from such varieties.

I might mention another besetting difficulty that is experienced by the northern grower, which is the oft recurring trouble in producing roots in one season that will match up in size with the scions. A rainy season like the past, which with us makes a heavy growth of branches on the older trees from which scions are cut, has the opposite effect on the small seedlings. About the best way we have found for meeting this problem is to grow three or four times as many seedlings as it is expected to use, and also by keeping a vigilant eye on the grafting to see that the largest stocks are saved for the largest wood. Eastern growers regard this as a needless expense, and that is one of the many items that makes the northern grown tree cost more and, as we insist, worth more.

To sum up the few real points that have been made in this paper I would call attention to the following:

First. The "best" stock for apple grafting in the north has not yet been agreed upon by orchardists or nurserymen.

Second. We do not condemn a variety which winter-kills below the ground unless we are certain that it was grafted on a hardy root.

Third. The ideal stock for the Minnesota nurserymen is one that is vigorous as well as hardy, some especially hardy kinds being prone to show a slow and cautious growth.

Fourth. A tree grown from a short-root piece graft throws out many side roots above the union, and the true effect and value of the stock used is not as easily discernible as with trees crown-grafted on whole roots.

Fifth. While some of our horticultural experts maintain that stocks grown from eastern seed are just as good as those from seed grown here, both the variety and the manner of grafting have an important bearing on the strength of the assertion, since a very hardy variety when piece-grafted produces many roots of its own which are by nature hardy while the same would not be true of a less vigorous sort.

THINNING APPLES—Where apples set heavily, and particularly in commercial orchards, it pays to thin to such an extent as to insure good size. The cost of thinning a well-loaded apple tree should not exceed 50 cents, and the returns for this work are much more than that. The work should begin within three or four weeks after the fruit sets. The color of thinned fruit is much better than that of unthinned.

THE FOREST PROBLEM IN NEW YORK.

(A talk.)

Mr. O. C. Gregg: I am interested in this question from the side the chairman suggested, and that is, growing forests rather than preserving them. Last winter I got an impression that did me a great deal of good. I spent a number of weeks in the state of New York, and I learned that their preservation which I had been reading about for some time was not what I thought it was, and there is a wide difference between what you read about a thing and seeing it for yourself. It had been forty years since I had seen New York. I lived there just before I came west, and oh, the change! I told some of my friends it looked just as though they had tried to make New York baldheaded. From the top of some of those hills I could see the rolling country for miles around, and, I say to you frankly, it did not appear to me as though there were any more groves in New York than we would find in the western states today. I observed one thing, that sometimes a generation of people will do very foolish things because they do not know what is coming. I looked at those denuded hills with the rocks cropping out and the land bare. I could understand that they thought they must remove all the trees to get pasture land. Imagine what we would think of a hill pasture like that. But they had done in their day and generation what they thought they ought to do. They were doing the most foolish thing they could do. They could grow enough on an acre of rich river bottom to more than offset what they could grow on thirty acres of hillside.

One of the greatest things for the American people to do is to form the thinking habit, the studying habit, the observing habit. You present a fact like that before men, and, like a steer in a pen, they will shake their heads. When I was traveling I generally tried to sit beside the driver because I liked to ask him questions. As we crossed a little stream I said to him, "How about this stream; does the water run down here in the summer?" I knew all about that country, and I knew that little stream flowed freely through the whole year when I was a boy. The driver told me it did not run in the summer, it was as dry as the road. Talk about paper mills. I am glad Mr. Owen found a man who was cutting forests with some little sense. Down in the eastern states they are taking everything for the paper mills. They grind all the wood on the steep slopes up into paper. Nothing is left. I took one man to task about devastating the forests. "Well," he said, "Mr. Gregg, business is business; we have got to get some money out of this." There was a remark made this afternoon which brings out the matter clearly. It is the battle ground between the greed of one man and the public to live.

I was deeply interested in observing the effects of denuding the forests on the water supply. This last summer we had such a deluge that I took much interest in reading about the ark. I did not know but what we needed a second Noah to save us. I have been out there thirty years, and I know what drouth means, and yet the fact remains, as a man significantly remarked, "The old Mississippi has struck 12." The water supply is going down. Judge Crosby, of Red Wing, says, "I have been watching the water supply of the Mississippi, and I have noticed this in a time of flood: When the waters come down now they come in a deluge, and then the head waters are left comparatively dry." I heard more talk about drouthy seasons in the state of New York than I ever heard in Minnesota. It is a fact; we all know it is so. Why is New York a drouthy state? Because her timber is stripped from her hills and mountains. One thing could yet be done: if they would keep the fires down those hills would soon be covered with pine and spruce, but they continue in a dumb way to turn cattle and sheep on those hills to nibble there, and they nibble away their forests. It is nothing short of wicked for us to make use of the needs of others to save ourselves. I am glad to say the prairie region is no longer treeless as it was when we went into it, but at first we were whipped out by the northwest and the southwest winds. But we had to grow trees, we had to do it. We who were brought up in New England were not troubled with winds that blew the dirt in our eyes, and we had to get these trees as a matter of self protection.

BEST TEMPERATURE FOR APPLES.—Experiments have proved that a lower temperature than at first used by commercial houses is more desirable for apples. The temperature most satisfactory is 33 degrees and in our experiment was the temperature we tried to keep. Lowering the temperature does not stop all changes going on in the apple but simply delays them. Fruit cannot be kept indefinitely at 32 degrees freezing, without any changes. There are chemical changes going on which result in what we call over-ripeness, mealiness and loss of flavor. This change is independent of decay and is hindered by low temperature and hastened by high.—Iowa Ex. Station.

THE IDEAL FRUIT PACKAGE is one that is neat and attractive to catch the eye, rigid enough to carry the fruit without bruising and so made that when opened to expose the fruit as much of it as possible is shown. Many packages have too much ventilation. If the fruit is thoroughly cooled before being packed, there is really no need of ventilation. The ideal fruit package should be the largest possible package that you can get into the home. Where the package must be broken, consumption is lessened. Two quarts of peaches will be made to go if they are bought by the quart, but if in a small basket four to six quarts will be consumed in the same length of time. Apples can be marketed to advantage in baskets holding eight, ten or sixteen quarts, similar to the Climax grape basket.—J. H. Hale, Connecticut.

SELLING TREES.

C. C. HUNTER, MINNEAPOLIS.

The early settlers that came to this state were largely men from the east, where they had plenty of apples and small fruits. They started into stock and grain farming with success, but with fruit growing they often made a total failure. They were worked to death with the tree agent from the east, and while thousands of dollars were spent and carloads of trees were shipped in here from Ohio and New York the farmers and lovers of fruit have often not realized a cent out of their work and money. The varieties planted were, as a rule, from the east and were not adapted to this climate and with their eastern methods in growing fruit they mostly made failures. Men experimented with seedlings and propagated fruit plants and soon found out that with right varieties fruit could be raised here with success, and the many successful fruit growers are witnesses to the truth of this statement.

Reliable nurserymen are anxious to do an honest, legitimate business, and nine times out of ten where there is any difficulty the consumer or the agent is at fault. For example, you order one hundred apple trees through an agent. The firm you buy your stock from will pack and ship them to you in good shape, and they will arrive at your depot in the best kind of condition. Now here is where your trees will die, if the roots are exposed to the sun and wind while you take them home. I have seen men planting trees who would lay out fifteen or twenty trees and allow them to be exposed to the sun and wind so that they would be dying before they were planted. You can see in such a case the nurseryman is an innocent party and the loss is not his fault.

The people are interested in fruit raising, and if they want to make a success they ought to know the advantage of spring as compared with fall planting. Location and soil they should also study in relation to varieties as well as how and where to plant and when to buy. The care of trees after planting should receive their careful attention. If they would only study the conditions they are to work under they would get far better results than is the general rule. All of which would be in favor of the nursery business.

The tree agent and the nurserymen go hand in hand. Agents vary a great deal. Some are trying to make an honest living and are working for a reliable house and do a great deal of good in

the section they have worked in; others are what you would call cut-throats and never sell twice in the same place and are doing a great deal of harm. He means, he says, to always work new territory. This is the man you want to look out for. He usually has a silver tongue and will talk more and say less that is of any value than any other drummer on the road. Beware of this man! Yes, I know he has a nursery in his backyard and will ship in more trees from the east than you could plant on a ten acre lot.

The ideal salesman is the man that will do a lot of good in the country he is working. He is, in fact, a horticultural missionary pioneer, always leaving a trail of helpful suggestions behind him, which makes him always sure of a welcome from his old customers. Such a man should first know his business, know how to handle trees, which are the best varieties to recommend, how best to care for and cultivate his fruit. I would advise a man in starting to have at least a year's experience in some good nursery; this would be a great deal of help to him and give him the power to teach the people the right methods in fruit growing. Nurserymen could well afford to give their salesmen five per cent more on sales if they would take a year's training in their nursery. This would enable them to do a more satisfactory business.

Of course there are men that could not sell gold dollars for 90c; they are not natural salesmen; but what is wanted is salesmen that can sell goods and come around the next year and look a man square in the face and sell him a larger bill than before.

Mr. Philips: What do you think of a nursery that advertises for men and says "previous experience not necessary?"

Mr. Hunter: I think of it about as the rest of you do.

SIMPLE SEED TESTERS.—Very simple apparatus is recommended for home testing of seeds. The simplest and most satisfactory is the sand plate. Use an ordinary china dinner plate, filled with fine sifted sand, free from impurities. Pour boiled water over the sand and shake the sand down into an even bed in the plate. Drain off the excess of water by tipping plate for a few seconds, and plant seed germ down in the sand. Turn a second plate over the first to prevent the too rapid evaporation of moisture. Set this tester in a warm living room and remove seeds as they sprout. If the sand dries out before the end of test, more water can be added.

A second method of home testing is a tin basin, the bottom of which is covered with water. Pans, saucers or dishes of saucer shape are set in the water, and blotting paper or cloth laid on the saucers. The seeds are placed between the folds of paper or cloth, and the top of the basin covered with a pane of glass. This tester is kept in a warm living room and will give satisfactory results if extremes of temperature and moisture are avoided. Record slips can be placed with each sample.

THE PAEONY.

REV. C. S. HARRISON, YORK, NEB.

In the land of the North, where old Boreas reigns,
Binding rivers and fields in his terrible chains,
Where the brilliant Aurora, with fingers of light,
Is painting her splendors on garments of night;
Where the chill arms of winter our beauty enfolds,
And wrap up her form in a mantle of cold,
She wakes from her slumbers and springs to the light,
And welcomes the warmth with her countenance bright.
How winsome her beauty! She floods all the air
With billows of fragrance, delicious and rare.
Away in the Southland, in the land of the sun,
And out on the plains, where the wild tempests run,
She blooms in her beauty, revealing her worth,
Then hides from the heat in the sheltering earth.
Where the fair Rhododendrons in radiance glow,
And their wonderful glory of loveliness show;
And Azalias are robed in their princely attire,
All aflame in their vestments of crimson and fire;
There her fragrance and graces our senses allure,
Full as lovely in form, and in beauty as pure,
By the side of the Rose in her robes of the morning,
And graces exquisite, her beauty adorning;
To whose fairy sweetness will ever belong
The legends of story, and tributes of song.
She need never hide in confusion and shame,
Or cringe at the thought of the magical name.
The pond lily flings all her sweets on the air,
And opens before us a countenance fair,
But the queen of our love is as dear to the eye
As the delicate blooms which on still waters lie.
In the great prairie empire so dreary and vast,
Where roses are slain by the terrible blast,
Where sirocco and blizzard in tournament vie,
And flowers of the Eastland grow homesick and die;
Where gardens are lonely and homes are forlorn,
There bravely our queen lifts her beautiful form,
And laughs at the tempest and smiles at the storm.
And mothers whose eyes have grown weary with waiting,
And girls whose sweet spirits for beauty are aching,
Shall smile on the march of our glorious flower,
And souls that are hungry her beauty devour.
No more shall the homestead be sad and forlorn,
An invasion of beauty the land shall adorn.
How sweetly her blossoms the senses beguile,
And the weary revive with the breath of her smile!

THE IDEAL HORTICULTURAL SOCIETY.—The purpose of a horticultural society is to spread information. Growers can come together and exchange experiences and information that will help each other. Members must come together and exchange experiences and information that will help each other. Members must come to the meeting ready to give this. All men should stand on the same footing, and each one be ready to help. The program should not be too long, nor the speeches lengthy. Great stress should be laid on the question box. The executive officers should provide a suitable place where the speakers can be heard and understood. The presiding officer should follow up the business of the meeting, call upon men from their seats who can give information of general value, and cut off useless discussion.—W. C. Barry, New York.

OUR SUMMER BOARDERS—THE BIRDS.

OLIVER GIBBS, PRESCOTT, WIS.

We have always been friendly to the "feathered people" at our house, have provided for their wants as well as our own in garden plantings of such fruits as they like and sometimes fed them crumbs and other kitchen refuse; but it was only last spring that we began to entertain them as regular "summer boarders" with a table set for them where they could come and eat three times a day, same as ourselves, and between meals as often as they liked.

We first set a post to put their table on. Afterwards we used a six inch box elder near the corner of the house, sawing it squarely off six feet from the ground and sheeting it with tin near the top to keep the neighbors' cats from climbing it. Then to prevent the cats from jumping up we tacked on a square yard of limber wire screen, laying it flat on top of the tree stub, so that it projected from all four sides and just under the table.

The table itself was nothing but a piece of board twelve by fifteen inches, with two inch strips of batten stuff nailed on the edges and a small opening left at one corner to take out the sweepings. Above it, tacked to one side, extended a perch made of lath, about fifteen inches high.

Having no domestic animals to feed we placed on this bird table all the bits and scraps of food left from our dining table, and the kitchen refuse of everything edible, and often a piece from the cupboard or pantry shelf that was not refuse. And they rejected nothing of all this except the pickles.

Nearly if not quite all the species of birds that came to the table would pick the meat and fish bones clean. The larger birds, such as the grackles, the jays and the red-headed woodpeckers, liked potatoes; him of the scarlet crest seeming to prefer some dry, hard piece, like a baked potato skin or a crust, that he could amuse himself with by flying off with it and pounding it on a near-by tree. The tree sparrows preferred the bread crumbs. With these in their mouths they were often seen flying away to feed their nestlings. The thrush family seemed especially delighted with bits of cake, cookies, etc.

One day when I laid a piece of gingerbread on their table a cat-bird found it first. It was a pet bird of mine that the neighbors' boys rescued from a cat four years ago and brought to me, as it was too young to fly well. I gave it a room for a week or two, feeding it bread and milk till it was quite tame, then let

it go, and have known it ever since. When it returns in the spring it always brings a mate, who side-steps from me for a few days; but this old pet comes almost up to me, fearless, but not any more to my hand. Well, I will tell you what this catbird did when he found the gingerbread. If there is a magistrate here, or other person authorized to administer oaths, I am ready to make affidavit. He just took one bite, then hopped up on to the perch and sang me a song, rather a short one but very sweet; after which he grabbed as big a chunk of the gingerbread as he could carry and away he went, through the air, up the hillside among the brush, to announce the find to his mate and their nestlings. After that when declining cake for myself, as I usual-

Oliver Gibbs in strawberry time.

ly do at our own table, I made a practice of reserving the piece offered to me and carrying it out to the birds. I wish I could report unvarying acquiescence in this by the mistress of the house, but the truth of history must not be compromised. It was not safe to leave a plate of cake within my reach in "Mother Hubbard's cupboard" the rest of the summer.

In the spring and summer, and till all the birds had brought out their nestlings, there was much waiting of the weaker species for the strong to feed. (This I hope to prevent hereafter by having a specially contrived table for the smaller birds). But we did not notice any quarreling about it. Later in the season they all ate together, pell-mell and higgledy-piggledy, a real

happy family. The red-headed woodpecker was the boss of all of them. For a while he seemed to enjoy sitting on the perch to keep the jays away, but in August I counted five jays at once on the table with two woodpeckers, and the boss old woodpecker on the perch just calmly looking down to see the picnic going on. The jays and grackles liked the bits of boiled sweet corn so well that they left the standing ears in the garden almost untouched. The jays thinned out the Longfield apples just about right, taking the wormy ones only—I suppose because these colored up first. We never saw a robin or a brown thrush on the table, but there were plenty of them around, and they would pick up from the ground the crumbs that the others spilled overboard.

Although our place is near the water's edge, on Lake St. Croix, and has many old trees and some shrubbery that the birds like so well for shelter and nesting, the fruit and other things they helped themselves to in the garden was a mere trifle, except the green peas. Of these the orioles took about ten per cent. One day my wife thought she would keep them away from at least one row, so she covered it carefully with burlaps and old aprons. The birds thought this was done for their benefit, just to fix it so they could work in security from cats, so they crawled in under the coverings and finished that row in great glee, leaving the other rows pretty much alone for a while. I presume the coverings will be put on next year, a row at a time, to protect the other rows in the same way.

One after another our summer boarders have mostly gone away. The last thing we did for them before leaving home ourselves for the winter was to pick the remaining sweet corn in the garden and place it on the terrace walls for the winter supply of the blue jays, where I presume it will be divided with the gray squirrels.

I want to say here for the credit of Prescott, that it is a rare thing now to see a boy going about carrying a slingshot or a gun to annoy the birds within our city limits. We have no Audubon club in town, but our principal and teachers of the public school took up the matter of bird protection a few years ago and have succeeded in establishing a public sentiment in favor of it.

Just one thing more, briefly. I think the scarcity of the little song birds at our city parks and homes is mainly due to an insufficient food supply, the electric lights and the noise. These timid, delicate birds cannot stand the glare and racket, and so seek homes elsewhere. Your robins and your blue jays can, and they remain.

There is also one other bird that remains—the only one I see on your Minneapolis streets when I come here in the winter, and I am always glad to meet him. I do not mention his name for fear some one will cry "Johnny, get your gun!"

Appended, for reference, is a list of eighty-five kinds of birds observed at St. Paul and Prescott, kindly furnished me by Miss Alice Candace McCray, of St. Paul. The most of the hawks, owls and water fowl are omitted. The common and scientific names are given in parallel columns, the latter being in accord with "Notes on the Birds of Minnesota," by Dr. P. L. Hatch, a publication of the Minnesota Geol. and Nat. Hist. Survey, issued under the supervision of Prof. H. F. Nachtrieb.

Common Name—	Scientific Names—
1. Robin.	1. Merula Migratoria.
2. Bluebird.	2. Sialia sialis.
3. Brown Thrush.	3. Harporhynchus rufus.
4. Wood Thrush.	4. Turdus mustelinus.
5. Hermit Thrush.	5. Turdus aonalaschkae pallasuo.
6. Veery Thrush.	6. Turdus fuscessens.
7. Baltimore Oriole.	7. Icterus galbula.
8. Orchard Oriole.	8. Icterus Spurino.
9. Purple Grackle.	9. Iuiscalus Iuiscula.
10. Rusty Blackbird.	10. Scoeocophagus carolinus.
11. Crow.	11. Cornis Americanus.
12. Red-winged Blackbird.	12. Agelains phenaeceus.
13. Bobolink.	13. Dolichonyx oryzivorus.
14. Cowbird.	14. Molothrus Ater.
15. Cat-bird.	15. Galeoscoptes carolinensis.
16. Meadowlark.	16. Sturnella Magna.
17. Blue Jay.	17. Cyanocitta cristata.
18. Nighthawk.	18. Chordeiles virginianus.
19. Whip-poor-will.	19. Antrostomus vociferus.
20. Mourning Dove.	20. Zenaidura nacroura.
21. Ruffled Grouse.	21. Bonasa umbellus.
22. Bob-white.	22. Colinus virginianus.
23. Purple Martin.	23. Progne subis.
24. Barn Swallow.	24. Chelidon erythrogaster.
25. Bank Swallow.	25. Clivicola riparia.
26. Cliff Swallow.	26. Petrochelidon lunifrons.
27. Chickadee.	27. Parns atricapillus.
28. White-breasted Nuthatch.	28. Sitta Carolinensis.
29. Red-breasted Nuthatch.	29. Citta Canadensis.
30. Junco.	30. Junco hyemalis.
31. Kingbird.	31. Tyrannus tyrannus.
32. Phoebe.	32. Sayornis phoebe.
33. Wood Pewee.	33. Cantopus virens.
34. Least Flycatcher, Chebec.	34. Empidonax minimus.
35. Warwing; Cedar-bird.	35. Ampelis Cedrorum.
36. Loggerhead Shrike.	36. Lanius hedoricianus.
37. Northern Shrike; Butcher-bird.	37. Lanins borealis.

38.	Chipping Sparrow.	38. Spizella socialis.
39.	Song Sparrow.	39. Melospiza fasciata.
40.	Vesper Sparrow; Grass Finch.	40. Poorcoetes gramineus.
41.	Tree Sparrow.	41. Spizella monticola.
42.	White-throated Sparrow	42. Zonotriehia albieollis.
43.	Field Sparrow.	43. Spizella pusilla.
44.	Lark Sparrow.	44. Chondestes grammacus.
45.	English Sparrow.	45.
46.	Fox Sparrow.	46. Passerella iliaca.
47.	Dickeissel.	47. Spiza Americana.
48.	Towhee; Chewink.	48. Pipilo erythrophthalmus.
49.	Goldfinch.	49. Spinus tristis.
50.	Purple Finch.	50. Carpodacus purpureus.
51.	Indigo Bunting.	51. Passerina cyanea.
52.	Rose-breasted Grosbeak.	52. Zanrelodia hidoriciana.
53.	Evening Grosbeak.	53. Cocothraustes Vespertina.
54.	Scarlet Tanager.	54. Piranga erythromelas.
55.	Red-eyed Vireo.	55. Vireo Olivaccous.
56.	White-eyed Vireo.	56. Vireo Noreboracensis.
57.	Yellow-throated Vireo.	57. Vireo flavifrons.
58.	Warbling Vireo.	58. Vireo Gilrus.
59.	Horned Lark.	59. Octocoris alpestris.
60.	House Wren.	60. Troglodytes aedon.
61.	Winter Wren.	61. Troglodytes Hiemalis.
62.	Brown Creeper.	62. Certhia familiaries Americana.
63.	Black and White Creeper.	63. Mniotilta varia.
64.	Ruby Crowned Kinglet.	64. Regulus calendula.
65.	Golden crowned Kinglet.	65. Regulus satrapa.
66.	Yellow Warbler.	66. Dendroica oestira.
67.	Redstart.	67. Setophaga ruticilla.
68.	Myrtle Warbler.	68. Dendroica coronata.
69.	Maryland Yellow-throat.	69. Geothlypis trichas.
70.	Chestnut-sided Warbler.	70. Dendrocia Pensylvanica.
71.	Black-poll Warbler.	71. Dendroica stuata.
72.	Magnolia Warbler.	72. Dendroica maculosa.
73.	Yellow-breasted Chat.	73. Icteria virens.
74.	Bay-breasted Warbler.	74. Dendroica castanea.
75.	Belted Kingfisher.	75. Ceryle Alcyon.
76.	Cuckoo.	76. Coccyzus Americana.
77.	Flicker; Yellow-hammer.	77. Colaptes auratus.
78.	Red-headed Woodpecker.	78. Melanerpes erythrocephalus.
79.	Hairy Woodpecker.	79. Dryobates villosus.
80.	Downy Woodpecker.	80. Dryobates pubescens.
81.	Sparrow Hawk.	81. Falco Sparrerius.
82.	Sharp Shinned Hawk.	82. Accipiter Velox.
83.	Ruby-throated Hummingbird.	83. Trochilus Colubris.
84.	Yellow-headed Blackbird.	84.
85.	Black-throated Blue Warbler.	85.

(This list has been also carefully revised by Dr. Thos. S. Roberts, of Minneapolis.)

RE-FORESTATION IN NEBRASKA.

(A talk.)

Prof. S. B. Green: I was very much interested this summer in some work I saw down in Nebraska. I happened to go down there through the kindness of Mr. Harrison. I went down to talk to their forestry association, and while there I went out to what is known as the sand hills of Nebraska. They have got some good land out there. It is a kind of a "garden of the Lord" where Mr. Harrison lives, but 150 miles northwest of there I got into one of the most desolate and forsaken looking pieces of country I know of, and yet I kind of liked it. That is the sand hill region. That kind of country is blowing about and moves from one place to another. The high hills have steep sides, and the sand is constantly blowing about. It looks almost like an ocean with rolling waves after a storm. There is no general direction to those hills; they run in every direction. You can feel the sand moving all the time. The government has undertaken to establish a reservation down there, known as the Dismal River Forest Reserve. They have undertaken to plant that country with trees. It is quite a proposition. They have a lot of energetic young fellows down there from the Bureau of Forestry, and they are carrying out that work in good shape. They propose to plant down there the hardiest of our pines or anything, in fact, that will hold those sand hills in place and make them worth something. At present they do not grow anything except a scanty crop of herbage. They are using lots of seedlings there. I think Mr. Scott, the man in charge, wrote me he had about a million he had raised this year which he proposed to transplant into nursery rows next spring. I also got a letter from Mr. Mast, who is Mr. Scott's assistant, written from New Mexico, in which he said he had gathered 1,100 bushels of pine seed. They have four or five acres of screen put up this autumn. They are right on the banks of the river. There is nothing pretty in that country. The houses are generally sod houses. I do not believe those trees will grow very fast, but they will get something out of it, and if the wind is prevented from sweeping over those hills they will produce better and more nutritious grasses.

I have seen something of the same formation, similar in appearance although covered with different material, in Denmark. That was in a moist country where they get the wind from the North Sea, but the ridges there are covered with heather, and it looks just as bad as the sand hills of Nebraska. The Danes think it is a great lot of country, but it is nothing compared with Nebraska. They say in Europe we beat them in everything. Speaking along that line, they have an interesting practice over there. I was going at one time through the Forest of Hessen in the Vogel Mountains. The country there was sparsely settled, and the farms looked like the hill farms of New England and New York. They have fine roads through their forests, and they have blockhouses at short distances from each other. They try to make their forests a sort of park. They have a little guide book in those blockhouses, and when you want to take a nine-mile walk, for instance, you follow the blue

marked road and you get to the place you started from, and you will have had a nine-mile walk. If you want to go four miles you follow the yellow, and for a three-mile walk you follow some other color. It is really a very nice arrangement. They take great pride in keeping those things up. They had there a certain musical instrument called a "bombass." It is a stick about three feet long with a ring at the bottom with a lot of little bells on, and when you strike it against anything it will jingle like a tambourine. Then it has a cord as large as a small clothes line from the top to the bottom, and on that they put a pig's bladder, blowing it up about as big as a football. Then they had an instrument made of wood about three feet long with notches sawed in. They would strike it on the floor and draw the stick across the string, and it would make a nice little jingle. Of course we were interested, and the old oberforester said it was one of the oldest instruments known and the only one of the kind. He made the remark that now he supposed the Americans would have the biggest bombass in the world. (Laughter.) I have not heard anything about its being produced, but suppose it will be.

RESOLUTIONS ABOUT TRIAL STATIONS.

(Adopted unanimously at late meeting of Minn. State. Hort. So.)

To the Honorable Board of Regents, State University of Minnesota:

Resolved: That as an association representing great agricultural and horticultural interests in this state we recognize in the Agricultural Department of the University of Minnesota a great aid to the advancement of our state agricultural and horticultural interests generally, and we thoroughly endorse the educational work it is now doing.

Resolved: That we are greatly pleased at the liberal treatment which this department of our university received at the hands of our legislature last winter.

Resolved: That we are surprised to learn that some of the members of the Board of Regents of our State University are opposed to the continuance of the Owatonna Tree Station.

Resolved: That we heartily endorse the work of the Owatonna Tree Station and are opposed to its being discontinued unless the work now being done there shall be removed to a more suitable location where it can be continued on a much larger scale and in a manner commensurate with the growing horticultural interests of the state of Minnesota.

Resolved: That we consider the region of Lake Minnetonka, on account of its natural advantages, nearness to the central station and ease of access therefrom, as especially well located for an orchard trial station, and would call your attention also to the fact that the expense of installing a station there would be much more than met by the profits accruing to the Board of Regents from the sale of the property formerly used as an orchard trial station in that region.

THE PINES AND THEIR COMPARATIVE VALUE IN MINNESOTA.

C. E. OLDER, LUVERNE.

In the subject assigned to me for this meeting, I shall treat largely of all evergreens hardy enough and desirable for the prairie portion of this state.

We all recognize the fact that in the northern, or pine land, part of our state the white pine is the tree of all others of commercial value—and I also see that the United States government thinks the same, as they are setting out millions and millions of white pine in some of the sandy counties of Nebraska as a forest reserve. But for the prairie portion of Minnesota the white pine does not thrive so well as some other evergreens. The Scotch pine, Austrian pine, ponderosa and jack pine, with the spruces, white and Norway, with balsam fir and red cedar properly procured, properly arranged, properly planted and properly cared for, will do well and change the climate from frigid to temperate, and a cold, storm-swept farmyard to one of comparative comfort—and whatever contributes to the comfort of man or beast adds to the value as well as the pleasure of the one providing it. While I would not discard the growing of the deciduous trees or groves, I would use them largely as a protection for young evergreens which, holding their foliage during winter, when it is most needed, give the best protection and the best satisfaction.

As we drive over the country we see with regret and sadness the indifference of some of our people to the beauty and comfort of a bright green evergreen grove or hedge, with its background of white, and also to its value in home protection.

One of the chief values of the evergreen is that it modifies the severity of the climate in winter and has a cooling influence in summer. This is the reason that in the northern part of the state, that is covered with finest timber, the climate is not so severe in winter as on the southern and western prairies.

Evergreens are easily and safely handled, but no exposure to sun or wind can be allowed if you wish the trees to live.

I cannot close this paper without a few suggestions: Get your plants as near your own home as possible. Do not deal with an agent, but send to a reliable nurseryman who grows his trees. Open the box in cellar or shed and puddle the roots immediately. Keep from the air and plant deep and solid. Care for them as for any vegetable crop, and in a few years enjoy the fruits of your labor and rest in the shade and protection of your beautiful evergreen trees.

The Chairman: It might be of interest to know that I was down in Nebraska and saw what the government is doing there in the sand hills. I am in close touch with Mr. Scott and with Mr. Mast, and Mr. Mast informed me that he had gathered some 1,100 pounds of pine seed in New Mexico which they are planting out there, as well as some pinon pine and jack pine. At our station one of our students has 150 bushels of jack pine seed that will be planted in Nebraska.

A PLANT-INTRODUCTION GARDEN.

The United States Department of Agriculture has decided to establish a "Plant Introduction Garden" and Experiment Station at Chico, California. Contracts for the necessary land have been closed, and work has been begun on what will undoubtedly be the greatest institution of its kind in America and, perhaps, in the world. A beginning will be made with ninety acres, but it is the intention of the department to extend the area as the needs of the institution require. The garden will be devoted to experimental culture of the plants introduced from various parts of the world and to a careful study of plant life.

Such an institution has long been contemplated by the Agricultural Department. California was selected for its location on account of climatic conditions which admit of the culture of tender plants from the tropics and of northern products as well. The ideal location for such an institution is that which admits of the successful cultivation of the widest possible range of products, and the committee entrusted with the duty of selecting the site believe they have found it at Chico.

This committee was composed of Prof. P. H. Dorsett, Government Expert, who will have charge of the institution, and Prof. A. V. Stubenrauch of the University of California, acting with Dr. A. J. Pieters, head of the division for seed and plant distribution. Messrs. Dorsett and Stubenrauch spent months in making a careful study of conditions affecting plant life in various portions of the state, visiting and carefully inspecting each locality likely to prove available. The decision in favor of Chico was reached some time ago, but the site selected could not be secured, and another tract had to be chosen, which has now been done and the purchase consummated.

Chico is situated near the eastern border of the great Sacramento Valley, seventy-five miles north of Sacramento, the state capitol, and was the most northerly point considered by the committee. Climatic conditions in California are affected but little if at all by conditions of latitude, the orange, the lemon and the olive being staple products of a district that measures fully five hundred miles north and south.

RICH SOIL FOR FLOWERS.—In the fall dig up a large box of loose, mellow dirt, and mix with it about a gallon of dry, powdery, henhouse droppings. Pu this away in a dry place and when ready to start flower seeds or to set out some house plants, you have some extra high-grade dirt.

Summer Meeting,

1904,

MINNESOTA STATE HORTICULTURAL SOCIETY.

A. W. LATHAM, SECY.

The day selected for the summer gathering of our society opened with lowering skies and the prospect of a stormy day, which culminated in the middle of the afternoon with a fall of rain. This breaks the record of the horticultural society for fair weather on these occasions, as it has been a great many years since we have had other than a pleasant day for this meeting.

Notwithstanding the weather, about the usual number were present, somewhere in the neighborhood of three hundred. Probably the prospect of an unpleasant day stood in the way of the usual increase in attendance.

The show of strawberries was, as far as quality is concerned, also about on a par with last year's exhibit, but there were not as many plates shown, perhaps not over two-thirds as many. Mr. H. W. Shuman, of Excelsior, and F. F. Farrar, of White Bear, were the principal exhibitors in this department.

There was not the usual good show of roses, probably on account of the lateness of the season, many of the roses not being in blossom, but the Jewell Nursery Company made a very pleasing exhibit, and a good many varieties were also shown by Mr. Hawkins, of the Rose Hill Nursery.

The exhibit of peonies far surpassed any ever made before this society, there being upwards of sixty varieties exhibited and, as in the case of roses, most of these came from the two nursery companies above mentioned.

There were small exhibits of mushrooms and vegetables and a few apples. Mr. Wyman Elliot had on exhibition—not for competition, however—about twenty plates of the Perkins' seedlings, many of them still in fair condition. These are a part of the same lot that was sent to Boston to the meeting of the American Pomological Society, in September last, and were afterwards shown at the later winter meeting of this society.

A full list of the awards, the amount of which perhaps exceeds any previous summer meeting, will be found immediately following this report. The total amount is $153.50.

Seats were provided at the table for the picnic dinner of the society in sufficient number for the members present and accompanying friends, and tickets were issued to all entitled to them, so that every one present was amply cared for. It may be proper to suggest here that every member attending this annual picnic gathering should bring with him his share of the picnic dinner, as also enough more to accommodate any friends that may come along. There is no fund to draw from for this festive occasion except the contributions of the members.

The forenoon was spent, as usual, in looking about the grounds, although the rain of the night before interfered somewhat with this part of the entertainment. Prof. F. L. Washburn had a two-wheeled machine standing on the lawn designed to be used in spraying nursery stock, providing nozzles for directing the spray both up among the foliage and down upon it. Tests were given with this, and the machine was examined with interest.

At two o'clock the hall was put in shape for the regular afternoon session. Across the front end of the hall and along one side, in great profusion, were banked the flowers shown, making a very attractive setting for the meeting. No formal program had been prepared and all that was said was impromptu, much in the nature of an object lesson, as many of the talks were accompanied by exhibits of flowers and fruit.

In the absence of Dean Liggett, Prof. Green appropriately welcomed the society to the Experiment Station, and President Wedge, who presided over the meeting, made a suitable response.

Mr. F. F. Farrar, of White Bear, was then called upon, and, with a dozen plates of choice strawberries before him on the table, he discussed in a practical and interesting way on the different sorts of berries grown at his place. As no shorthand reporter was in attendance it is impossible to give even a gist of these talks, which it would have been quite difficult to have rendered well in any case with the continuous references to the fruit shown.

Mr. Wyman Elliot followed with a brief description of two or three new varieties growing at the place of his nephew, Mr. H. W. Shuman, at Excelsior.

Mr. A. Brackett, of Excelsior, upon invitation, also spoke briefly on methods of cultivating strawberries.

Mr. John Nordine, of the Jewell Nursery Company, upon request, exhibited a number of varieties of roses and peonies that were specially popular sorts and described their good points and special methods of cultivation useful in each case.

The exhibit of Perkins' seedlings, shown by Mr. Elliot and referred to above, was brought out upon the table before the audience, and Mr. Elliot talked in his usual interesting way of the quality of some of these and his hopes as to the outcome of this orchard.

Prof. S. B. Green was invited to talk a little in regard to some of the annual and perennial flowers on exhibition, of which there were a number of very nice bouquets. This he did in his happy way, holding up each variety shown and giving us many new thoughts in regard to them.

A report as to what had been done by the bird committee appointed at the last annual meeting of the society was presented by Mr. S. A. Stockwell as a member of the committee. As the substance of this report has already appeared in the magazine no further reference will be made here except that the committee finds itself short some $25.00 in the amount of money found necessary to expend in reaching the district schools of the state with the literature prepared and other expenses connected with this matter, and opportunity was given to member present to contribute. A number of contributions were made at the time. Any of our readers interested to help in this very useful movement can do so by sending contributions direct to the secretary. He will forward them to the committee.

Prof. F. L. Washburn, who prepared the literature referred to, also spoke very briefly as regards the practical character of the work which was being done in the direction of protecting useful birds.

One of the veterans of our society, Mr. J. R. Cummins, of Eden Prairie, had a lot of novelties on hand to show to the meeting, in the way of branches of horse chestnut, buckeye, acacia, shellbark hickory, etc.

Secretary Latham made a short report as to the condition of the fruit display at the World's Fair, to which something like 250 quarts of strawberries have been sent this week. Mr. L. R. Moyer and Mr. P. V. Collins, who were called upon and had recently seen the exhibit, spoke of there being a scarcity of good fresh fruit on exhibition at that time. The defect of course has been remedied by the recent shipments referred to by Secretary Latham.

Prof. Green also spoke of the interesting character of the Minnesota fruit display at St. Louis, which he saw about a month ago.

This closed the proceedings of as pleasant and profitable a summer gathering as the society has ever held. The clouds had cleared away, and with brighter skies the members departed for their homes.

AWARD OF PREMIUMS, SUMMER MEETING, 1904.

ROSES.

Madame Plantier	J. R. Cummins, Eden Prairie.	First	$0.50
Gen. Jacq	" "	First	.50
Paul Neyron	" "	Second	.25
Magna Charta	" "	First	.50
Baroness Rothschild	" "	Second	.25
Florence	" "	First	.50
Madame Caroline Testout	J. P. Brown, Eureka	First	.50
Coquette des Alps	" "	First	.50
Gen'l Jacq	" "	First	.50
Margaret Dickson	" "	First	.50
Prince Camille D'Rohan	" "	Second	.25
Fisher Holmes	" "	Second	.25
Black Prince	" "	First	.50
Magna Charta	J. Hawkins, Minneapolis	Second	.25
Gen. Jacq	" "	Second	.25
La Reine	" "	First	.50
John Hopper	" "	Second	.25
Ulrich Bruner	" "	First	.50
Madam G. Louzet	" "	Second	.25
Clio	" "	First	.50
Salet Moss	Jewell Nursery Co., Lake City	First	.50
John Hopper	" "	First	.50
Jean Libaud	" "	First	.50
Harrison's Yellow	S. R. Spates, Wayzata	First	.50
Drural de Paul	Jewell Nursery Co., Lake City	First	.50
Frontain	" "	First	.50
Multiflora	" "	First	.50
Perle des Blanche	" "	Second	.25
Princess Adelaide	" "	First	.50
Persian Yellow	" "	First	.50
Anne de Diesbach	J. Hawkins, Minneapolis	First	.50
Vick's Caprice	" "	First	.50
Persian Yellow	J. P. Brown, Eureka	Second	.25
Victor Verdier	" "	First	.50
Baroness Rothschild	" "	First	.50
Mrs. John Laing	" "	Second	.25
Madame Plantier	" "	Second	.25
Perles des Blanche	" "	First	.50
Duke of Edinburg	" "	First	.50
Ulrich Bruner	" "	First	.50
Chapeau de Napoleon	" "	Second	.25
Fisher Holmes	Jewell Nursery Co., Lake City	First	.50
Bruner	" "	Second	.25
Rohan	" "	First	.50
Mrs. John Laing	" "	First	.50
Gen. Washington	" "	First	.50
Luxenburger	" "	First	.50
Crested Moss	" "	First	.50
Baroness Rothschild	" "	First	.50
Mdm. Gabriel Luizet	" "	First	.50
Paul Neyron	" "	First	.50
Clio	" "	First	.50
Victor Verdier	" "	First	.50

E. NAGEL,
FRANK BERRY Judges.

PEONIES.

Louis Van Houtte	J. Hawkins, Minneapolis	First	.50
Rosea Magna	" "	First	.50
Triumphans Rubra	" "	First	.50
Maxima Alba	" "	First	.50
Festiva Maxima	J. R. Cummins, Eden Prairie.	First	.50
Rosea Elegans	J. Hawkins, Minneapolis	First	.50
Formosa	" "	First	.50
Delachi	" "	First	.50
Mdm. Vilmorin	" "	First	.50
Grandiflora Rubra	A. Hawkins, Excelsior	First	.50
Victor Tricolor	" "	Second	.25
L'Esperance	" "	Second	.25
Lady Alice	S. R. Spates, Wayzata	First	.50
Decossine	Jewell Nursery Co., Lake City	First	.50
Pink Festiva	" "	First	.50
Tokio Single White	" "	First	.50
Prince Purse	" "	First	.50
Galatizuma	" "	First	.50
Tokio Single Red	" "	First	.50
Princess R. Robasco	" "	First	.50
Grandiflora	" "	First	.50
Sulphurea Alba	" "	First	.50

Princess Clothilde	"	"	First .50
Lee Buccner	"	"	First .50
Blanche Beauty	"	"	First .50
Napoleon	"	"	First .50
Duke De Wellington	"	"	First .50
Pottsii Plena	"	"	First .50
Paeoneas Rubra	"	"	First .50
La Reine	"	"	First .50
Modesty	"	"	First .50
Grand Duke Alexis	"	"	First .50
Joe Veemain	"	"	First .50
Zibrikoff	"	"	First .50
Bacchie	"	"	First .50
Mdme. Courant	"	"	First .50
Candidissima	"	"	First .50
Artimis	"	"	First .50
Acme	"	"	First .50
Festiva Maxima	John Hawkins, Minneapolis		First .50
Elegante	"	"	First .50
Maxima	"	"	First .50
Comte de Nauteuil	"	"	First .50
Cytherea	"	"	First .50
De Jussieu	"	"	First .50
Grandiflora Superba	"	"	First .50
Funelina	"	"	First .50
Insignes	"	"	First .50
Isabella Karlitzke	"	"	First .50
L'Indespensable	"	"	First .50
Monsieur Durufle	"	"	First .50
Modeste Guerin	"	"	First .50
Pulcherrima	"	"	First .50
Rubens	"	"	First .50
Remedes Roses	"	"	First .50
Rosea Elegans	"	"	First .50
Chas. Gosselin	"	"	First .50
Andorensis	"	"	First .50
Auguste Meillez	"	"	First .50
Mdme. Channy	Jewell Nursery Co., Lake City		First .50
Count de Obssmont	"	"	First .50
Gladstone	"	"	First .50
Jean de Arc	"	"	First .50
Guard	"	"	First .50
Alba Formosum	"	"	First .50
Preciosa Nova	"	"	First .50
Delicatissima	"	"	First .50
Jeromus	"	"	First .50
Bricklianna	"	"	First .50
Perle	"	"	First .50
Chas. Goslilin	"	"	First .50
Festiva Maxima	"	"	Second .25
Mme. Breon	John Hawkins, Minneapolis		First .50
Adelaide Delachi	"	"	First .50
Plenissima Rosa Superba	"	"	First .50
Achilles	"	"	First .50
Beaute Francaise	"	"	First .50
Faust	"	"	First .50
Grandiflora Rubra	"	"	Second .25
Victor Tricolor	"	"	First .50
L'Esperance	"	"	First .50
Queen Perfection	"	"	First .50
Agida	"	"	First .50
Princess Mathilde	"	"	First .50
Washington	"	"	First .50
Festiva Alba	"	"	First .50
Purpurea Superba	"	"	First .50
Br. James de Rothschild	"	"	First .50
Duke of Wellington	"	"	First .50
Duchess d'Orleans	"	"	First .50
Tricolor Grandiflora	"	"	First .50
Rose d' Armour	"	"	First .50
Comte de Cressy	"	"	First .50
Formosa	"	"	First .50
Rubra Violans	"	"	First .50
Duc de Cazes	"	"	First .50
Whitleyi	"	"	First .50
Alexandrina	"	"	First .50

E. NAGEL,
FRANK BERRY, Judges.

BOUQUET OF GARDEN FLOWERS.

Bouquet	S. R. Spates, Wayzata	First	1.50
Bouquet	Mrs. F. H. Gibbs, St. Ant'y Pk.	Third	.50
Bouquet	H. W. Shuman, Excelsior	Second	1.00

C. C. HUNTER, Judge.

STRAWBERRIES—COLLECTIONS.

Collection	Harry W. Shuman, Excelsior	First	5.00

A. BRACKETT, Judge.

STRAWBERRIES—SINGLE PLATES.

Aroma	Harry W. Shuman, Excelsior	Second	.50
August Luther	" "	Second	.50
Arnot	" "	First	.75
Brunette	" "	First	.75
Brandywine	" "	Third	.25
Bennett	" "	First	.75
Carman	" "	First	.75
Countess	" "	First	.75
Challenge	" "	First	.75
Crescent	" "	Second	.50
Excelsior	" "	Third	.25
Fairfield	" "	First	.75
Hero	" "	First	.75
Haverland	" "	Second	.50
Livingston	" "	First	.75
Lyon	" "	First	.75
Lovett	" "	Second	.50
Marguerite	" "	First	.75
Miller	" "	First	.75
Minute Man	" "	First	.75
Marie	" "	First	.75
Nic Ohmer	" "	First	.75
New York	" "	First	.75
Oom Paul	" "	First	.75
Parson's Beauty	" "	First	.75
Pokemoke	" "	First	.75
Ruby	" "	First	.75
Success	" "	First	.75
Senator Dunlap	" "	Second	.50
Stahlin	" "	First	.75
Springdale	" "	First	.75
Sutherland	" "	First	.75
Warfield	" "	First	.75
Uncle Jim	" "	First	.75
Clyde	Geo. W. Strand, Taylors Falls	Second	.50
Hero	" "	Second	.50
Glen Mary	" "	Second	.50
Splendid	" "	Second	.50
Dornan	" "	First	.75
Bubach	" "	First	.75
Greenville	Gust. Johnson, Excelsior	Second	.50
Gandy	" "	First	.75
Cumberland	" "	First	.75
Lovett	" "	Third	.25
Splendid	" "	Third	.25
Wm. Belt	" "	First	.75
Nic Ohmer	" "	Second	.50
Clyde	" "	Third	.25
Beverly	" "	First	.75
Dr. Stamens	" "	First	.75
Gandy	Alfred Hawkins, Excelsior	Second	.50
Sample	" "	Third	.25
Senator Dunlap	" "	Third	.25
Crescent	" "	Third	.25
Senator Dunlap	A. Brackett, Excelsior	First	.75
Bederwood	" "	First	.75
Warfield	" "	Second	.50
Excelsior	" "	First	.75
Rough Rider	" "	First	.75
New York	" "	Second	.50
Enhance	" "	First	.75
Lovett	" "	First	.75
Corsican	S. R. Spates, Eureka	First	.75
Splendid	" "	First	.75
Johnson's Early	" "	First	.75
Warfield	" "	Third	.25
Brandywine	A. Brackett, Excelsior	Second	.50
Miller	F. F. Farrar, White Bear	Second	.50
Clyde	" "	First	.75
Bubach	" "	Second	.50
Brandywine	" "	First	.75
Enhance	" "	Second	.50
Eclipse	" "	First	.75
Sample	" "	Second	.50
Tennessee	" "	First	.75
Haverland	" "	First	.75
Cobden Queen	" "	First	.75
Monitor	" "	First	.75

Loyd	"	"	First	.75
Bride	"	"	First	.75
Klondike	"	"	First	.75
Isabella	"	"	First	.75
Glen Mary	"	"	First	.75
Parson's Beauty	"	"	Second	.50
Grenville	"	"	First	.75
Aroma	"	"	First	.75
Excelsior	J. F. Benjamin, Hutchinson		Second	.50
Johnson's Early	H. W. Shuman, Excelsior		Second	.50
King Benjamin	Jewell Nursery Co., Lake City		First	.75
Ridgeway	"	"	First	.75
Black Joe	"	"	First	.75
August Luther	E. A. Farmer, Minneapolis		First	.75
Michael's Early	"	"	First	.75
Crescent	"	"	First	.75
Enhance	J. P. Brown, Eureka		Third	.25
Corsican	"	"	Second	.50
Bederwood	"	"	Third	.25
Glen Mary	"	"	Third	.25
Sample	J. P. Johanson, Excelsior		First	.75
Bederwood	"	"	Second	.50

J. P. ANDREWS, Judge.

APPLES.

Seedling	J. R. Cummins, Eden Prairie	First	2.00

A. BRACKETT, Judge.

VEGETABLES.

Lettuce	Mrs. F. H. Gibbs, St. An. Pk.	Second	.50
Lettuce	H. F. Bussee, St. Anthony Pk.	First	1.00
Asparagus	S. R. Spates, Wayzata	Second	.50
Asparagus	Mrs. F. H. Gibbs, St. An. Pk.	First	1.00
Asparagus	Frank Moeser, Minneapolis	Third	.25
Pie Plant	Mrs. F. H. Gibbs, St. An. Pk.	Second	.50
Pie Plant	H. F. Bussee, St. Anthony Pk.	First	1.00
Pie Plant	Victor A. Neil	Third	.25
Beets	Mrs. F. H. Gibbs, St. An. Pk.	First	1.00
Beets	H. F. Bussee, St. Anthony Pk.	Second	.50
Peas	H. F. Bussee, St. Anthony Pk.	First	1.00

MUSHROOMS.

A. BRACKETT, Judge.

Horace Green	Minneapolis	Second	1.00
Mrs. Whetstone	"	First	2.00

F. L. WASHBURN, Judge.

HOPEFUL FOR PEARS AND PEACHES.—That veteran of Northwestern horticulture, F. K. Phoenix, Delavan, Wis , in a recent letter says: "Judging by your great success with apples especially I believe you,and perhaps I too, may live to see first-class pears and peaches home grown and comparatively common in the Northwest. I write this now, that there is profit, health and honest pride awaiting reasonable effort in that direction."

THE SEEDLESS APPLE.—Judging by articles seen in "American Fruits" and elsewhere, there seems to have been developed at last an apple that is practically seedless; at least that is the claim of the originators, who are now propagating this novelty and expect to have it ready to put upon the market in the fall of 1905. Dr. F. R. Smith, secretary of the Grand Junction, Colo., Fruit Growers' Association, says in reply to a query from "American Fruits:" "It is a fact that such an apple has been produced and the claim made is that they can propagate any variety of apple in the same way without seeds. I have seen some of the apples. They claim they will have plenty of trees on the market next spring." "American Fruits" in commenting upon this says: "The revolutionary nature of the new apple is not alone confined to its seedless character. The resulting effects are even more far reaching. Chief of these is the immunity of the new tree to frosts and cold weather. There is no germinating power to be destroyed, and as a consequence there is not a country too cold nor a season too backward where the seedling apple will not grow and bear fruit." These are broad claims, the value of which remains to be demonstrated.

Trial Stations.

MIDSUMMER REPORTS.

CENTRAL TRIAL STATION, ST. ANTHONY PARK.

PROF. SAMUEL B. GREEN, SUPT.

Although the past winter was characterized by exceptionally low temperature for a considerable length of time, yet there has been comparatively little winter injury to the plants that we have generally regarded could be depended upon. The varieties of apples of what might be called the third degree of hardiness, such as Ben Davis, showed considerable injury when growth started in the spring, but they have generally made a vigorous growth, and at this time bid fair to outgrow any harmful result of the past winter. The apples that have been entered in competition for the Horticultural Society premium of $1,000 have been thinned out by this winter, and I am glad on this account that we have had a severe winter that we might dispose of the tender varieties of these candidates for our favor. Such standard varieties as Hibernal, Patten's Greening and Duchess have shown plainly by their behavior this winter that it is no mistake to keep them on the list of first degree of hardiness.

The plums that we have regarded as being hardy have come through the winter in good condition, and the promise is now for a good crop. I should have stated that our apples also promise a fairly good crop on those trees that did not bear well last year.

Our grapes are in most excellent condition. The Beta grape, which has been pushed to the front by this Station for several years, remained on the wires last winter and yet started from the outermost buds, and is now in fine condition and promises a good crop this year.

The outlook for strawberries here never was better. Our soil is heavy and bakes badly, and this spring it was so solid that I thought it best to remove the mulch and cultivate the land, and partly, at least, as a result of this treatment we have a better crop than usual.

Although our blackberries were covered by earth they were gnawed by mice to such an extent as to be seriously injured.

The winter was especially severe upon a few plants that we have regarded as being exceptionally hardy, and among them are the bull pine, of Colorado, and the Platte River cedar, both of which have suffered far more than any of our native conifers. In rows parallel to the bull pine, the Norway, or red, pine has come through the winter in perfect condition; and in other rows where the native red cedar and Platte River cedar are together our native cedar is in perfect condition while the Platte River cedar is badly injured.

Among the plants of newer introduction which have come through the past winter in good condition and which I think are deserving a place in our plantings, is Cotoneaster acutifolia. This is a European shrub with bright, glossy foliage, and while

Autumn flowers in a corner bed.—Pyretherum Uligniosum and New England Asters.

it is of no special value for its fruit or flowers, is a most excellent plant for screens and other uses.

The late blooming tree lilac, known botanically as Syringa Pekinensis, has come through the winter in perfect condition, and is now (June 27) in flower. It is certainly a grand thing and well worth introducing more generally into our park plantings.

Among the things that were severely injured the past year was about fifty feet of hedge row of barberry, which was killed out entirely. I do not know of any unusual condition that existed this year different from many of the eighteen preceding years that it has grown in this place.

Our herbaceous plants, including peonies, irises and a lot of other similar plants, have come through the winter in fine condi-

tion, and the bloom on them has never been better than this year.

Our collection of hedges, which has attracted much attention in the past is in good condition. The only severe loss in it this year was the Platte River cedar. However, the Polish privit was badly killed back but has started from the roots and is again in good condition.

A small orchard on the north side of the hill at the station had washed badly, and last year we seeded it down, and now have a fine crop of clover growing on it, which we propose to cut and leave on the land. The object of thus seeding the orchard is to increase the amount of humus in the land. It is our intention to break up this clover sod next year.

MONTEVIDEO TRIAL STATION.

L. R. MOYER, SUPT.

After a winter of unusual severity and a late backward spring, the trees, shrubs and flowers at the Montevideo Trial Station are for the most part in good condition. Some hardy bulbs perished, such as Ixias and Sparaxias. The little blue Siberian Scilla, however, came through in good shape. The Narcissi (the old Van Sion) were badly injured. Tulips suffered to some extent and did not give the usual amount of bloom. A portion of our planting of Bleeding Heart and Perennial Phlox perished.

The earliest shrub to leave out and bloom at the station was the Manchurian Bird Cherry (Prunus Padus commutata). This shrub has been growing at the station for about ten years and has reached the height of about twelve or fifteen feet. It was a striking object when in full bloom this spring and created much comment. It was sent out from Russia as Prunus Maackii. It does not produce fruit at this station.

Three different species of Caragana are in cultivation at the station. Caragana arborescens has been growing with us for about twelve years and has reached a height of about twelve feet. It may be known from the other caraganas common here in the northwest by its long pinnate leaves. Caragana fruiticosa has not been cultivated here quite so long. It is of upright growth and with us has reached a height of about eight feet. It blooms more profusely than its larger relative and may be known from it by its having but four leaflets on each leaf stem. Caragana pygmaea attains a height of from three to four feet and is the most ornamental of the three. A hillside covered by this species when in full bloom is a striking

sight. Its leaves resemble those of Caragana fruticosa. It shows its bright green leaves early in the spring and is then very attractive.

By far the best of the bush honeysuckles is the one received from Prof. Budd some twelve years ago as Lonicera splendens. It is now known as Lonicera Tartarica speciosa. With us it has become a shrub about ten feet high, producing in May and in early June an immense profusion of deep pink flowers. The flowers measure rather more than an inch in diameter. This shrub is so readily and cheaply raised from cuttings that it ought to become common. Several other varieties of Lonicera Tartarica are also in cultivation at the station, besides Lonicera Morrowi and Lonicera Ruprechtiana. They are all well adapted to prairie planting.

The Russian Oleaster (Elaeagnus angustifolia), more commonly known as Russian Olive, has been growing at the station for about twelve years and has reached a height of about fifteen feet. Its silvery foliage becomes more beautiful year by year. It was uninjured by the winter. Russian Mulberry and Catalpa Speciosa suffered to some extent; but the Russian Mulberry is fruiting plentifully, and the Catalpa bids fair to bloom.

It was a hard winter on cherries. Ostheim and Suda Hardy root-killed, and Wragg and Bessarabian froze back to the ground. It is hardly best to encourage cherry planting on our western prairies.

Roses, even when carefully covered with earth, all suffered more or less; but Madam Plantier was uninjured. Rosa Rugosa, unprotected, came through all right and is now in full bloom.

Raspberries at this station were covered with earth and will produce a good crop.

Plums and apples are setting well, and we look for a fair crop of fruit. The old hardy sorts seem to be uninjured.

The following new material has been planted at the station this spring: Carolina poplar, Tartarian maple, Ludwig Spaeth lilac, Solanum dulcamara, Aristolochia sipho, Monarda didyma, Paeonia festiva maxima, Paeonia rubra, Paeonia modeste, Paeonia rosea, Paeonia Pottsii, Paeonia grandiflora, Paeonia delicatissima, Pyrethrum roseum, Madam George Bruant rose, Crimson Rambler rose, Marshall P. Wilder rose, Polygonum multiflorum, Chrysanthemum latifolium, Coreopsis lanceolata, Dicentra spectabilis alba, Dictamnus fraxinella, Pentstemon Torreyi, Silene Virginica, Calycanthus floridus, Lonicera Xylosteum, Pyrus arbutifolia, Anemone "whirlwind," Asclepias tuberosa, "Shasta daisy," Coreopsis grandiflora, Dicentra eximea, Silver King iris, Pyrethrum uliginosum, Rudbeckia speciosa,

Viola cornuta, Hydrangea paniculata grandiflora, Syringa Emodi, Philadelphus dianthaeflora, Spiraea tomentosa, besides several varieties of the newer apple trees.

PLEASANT MOUNDS TRIAL STATION.

J. S. PARKS, SUPT.

June 13, 1904.—The outlook for apples for this year and for the half-hardy trees in our section hereafter is not very encouraging. The past test winter and the previous summer, with scab affliction, have nearly wiped out all the half-hardy and many of the hardier kinds as well. We find the trees on our grounds that were the most affected with leaf and fruit scab last year are dying in proportion to the amount affected—Haas, Ben Davis, Canada Red, Bailey's Sweet, Tallman Sweet, Snow and a score of other varieties; and a long list of seedlings are dead or dying in about the order named, and in about the order or extent of scab on leaf last year—that would seem to be the cause of the mortality of the trees. On the other hand, some of the hardier trees, such as Duchess, Wealthy, Hibernal, etc., in this vicinity are reported as dead. Most of the cherry trees and young pear trees in this vicinity are killed.

Small fruits nearly all wintered fairly well, with prospect of a good crop of fruit. Apple crop will be very light. Duchess and Wealthy and most crab hybrids have set fairly well, while many varieties will not furnish a specimen.

Native plums wintered well and now indicate a bountiful crop. Some plum pockets and other blight, but not serious. No late frost to interfere with blossoms or fruit, even the Aitkin plum, that blossoms so early and is apt to be caught by late frost, escaped this year and is loaded with fruit. The nutbearing trees, such as black and white walnut, hickory, etc., are setting full of fruit. Forest trees, such as elm, soft maple and cottonwood, are now ripening a bountiful crop of seeds.

This season has been an ideal one for transplanting all kinds of nursery stock and a large amount of planting has been done.

We have been top-working a choice lot of plums on young native stock with excellent success so far. The top-working of apples that we have done for the last two years does not appear satisfactory at this time.

SAUK RAPIDS TRIAL STATION.

MRS. JENNIE STAGER, SUPT.

June 15, 1904.—Apple trees came through the winter well, but very few are bearing. Plums also lived, but will not bear much this season on account of plum pocket. Spraying seems to have no effect on that disease. All old raspberry plantations killed back, but young ones are thrifty. Currants and gooseberries are doing fairly well. Strawberries, especially Clyde, would have been a heavy crop but are suffering at present from drought. Young evergreens, catalpas and roses mostly killed to ground. Grapes doing fairly well. All evergreens, deciduous trees and shrubs over two years old doing exceptionally well.

WEST CONCORD TRIAL STATION.

FRED COWLES, SUPT.

June 13, 1904.—The winter of 1903-4 has left its marks on some of our tender varieties. The Early Richmond and Wragg cherries are dead, or nearly so. A few of them show a little life but will be of little value. The Compass cherry is alive to the terminal bud and hangs full of fruit.

Most of the plums that we are testing are fruiting, and some are so loaded that they will have to be thinned, or the trees will be injured.

Our bearing apple trees came through the winter in good condition, and most of them are quite full of fruit. We thought the severe cold of last winter would be a test of hardiness, but we find no injury, except a few one-year-old nursery trees killed back a little.

The raspberries killed badly in this locality where not protected. We were fortunate in having covered ours, and we have promise of a full crop if the season proves favorable.

Strawberries winter-killed some, where the covering was light, but in spots unprotected all killed out. They are full of bloom and promise a good crop, but they will be at least a week later than usual.

Grapes are all right. They are blossoming some, but they need a long season to mature any fruit on account of the late, cold spring.

Catalpa killed to the ground.

Flowering shrubs wintered well. Snowballs blossomed lightly this year, but Spirea Van Houttei was at its best and was much admired by all who passed by the place.

Some of my roses killed to the ground, even with a good covering last fall, but after trimming them back thrifty shoots started, filled

with buds. The Rosa Rugosa stood without any winter protection and came out perfect. At this time even the earliest roses have not blossomed, and paeonies have not opened yet.

Evergreens came through in good condition. Norway spruce sunburned badly but are starting a good growth. All varieties are making a beautiful growth. Colorado blue spruce are especially fine.

WINDOM TRIAL STATION.

DEWAIN COOK, SUPT., JEFFERS.

June 14th, 1904.—The wood of about all of our standard fruit trees shows some discoloration as a result of the hard winter of 1903-4, the Anisim, however, being about perfect. Hibernal and

Winter scene at the Windom Trial Station.

Duchess are not quite free from discoloration, while the wood of the Wealthy, Okabena, Peerless and Patten's Greening show a trifle more injury. All of the above named varieties are fruiting freely, and have probably not been materially injured. No blight in my apple orchard at this date.

Crab apples, as a class, did not fare so well, weakened, as they were, by the apple scab, which nearly defoliated some of the trees last summer. Some of them were dead this spring, and most of those

that survived did not bloom, but the Florence, Early Strawberry, B. Maid and Lyman's Prolific are now promising a good crop. Several eastern varieties of apples and some of our Minnesota seedlings are in rather bad shape, but I will reserve the details for the December report.

Plum trees in low, wet lands show considerable injury, no variety being exempt. The following varieties planted on well drained land are carrying a good crop: Wyant, De Soto, Wolf (freestone), Wolf (clingstone), Hawkeye, Stoddard, Forest Garden and many seedlings.

Norway spruce at Windom Trial Station. Set in spring of 1887.

There are no plum pockets on the plum trees, and the curculio does not appear to be doing much damage, but the plum rot destroyed many of the blossoms. This rot is now working to some extent on the short spurs. Varieties with Chickasaw or Japanese blood in them seem to be more susceptible to this plum rot than do the pure Americana varieties.

We have a few trees of the Vladimir cherry, and they are now carrying a small crop.

Strawberry plantations, as a rule, came through the winter in rather poor condition; the most exposed places suffered the most, and the perfect flowering varieties seemed to be injured more than the pistillates. They are just beginning to ripen on the old beds, and the prospect is that after all we will have a good crop of this fruit.

The Scotch pines, even where well sheltered from the winds, wintered poorly, and they do not, especially the larger ones, seem to be recovering very fast. The various spruces wintered finely and are now all of them growing vigorously. I believe they are better adapted to this section than are the pines. Arbor vitaes are also in good shape.

HORTICULTURE AT THE WORLD'S FAIR.

D. M. MITCHELL, OWATONNA.

Thursday, June 16.—I returned from the St. Louis exposition, having spent two weeks there. It is impossible for me to describe it; one must see the exposition to realize how great an institution it is; no line of business has been neglected, and the horticultural department is just one among the many.

When one enters the horticultural building he cannot help but feel that the fruit industry has been well cared for. The Palace of Horticulture is 400 by 800 feet and was erected at a cost of $228,000. In it nearly every state, as well as several foreign countries, are represented. There is that rivalry between the different states that makes the exposition what it is. A great deal of time and money has been spent by the exhibitors, and no one can visit the horticultural hall without realizing to some extent what the fruit industry of this country is.

We expect to see large displays from such states as California, Washington and New York, but when people come to the Minnesota exhibit, many not being familiar with what is being done in Minnesota are surprised that we really grow fruit here, and there is where we are showing that Minnesota is fast coming to the front with her fruit products. It is surprising how many people, even right here in our own state, know so little of our fruit industry. Our exhibit attracts a great deal of attention and receives very favorable comment.

When the boxes of Wealthy were opened and were found to be nearly all sound, it gave me even greater faith in it than I had before. I think no apple has received more comment than the Wolf River. We know the quality is not as good as many others, but

it is a wonderful show apple. Of course all our apples have been kept in cold storage, and the boxes are taken out as they are needed to replenish the fruit that has spoiled. This takes considerable every day, as cold storage apples do not keep well after being taken out, but we have enough to last until the new crop can be had.

The two turntables are running nicely and add greatly to the display. I am in hopes we will have a nice lot of strawberries sent down; they will keep well in the refrigerator cases, and with care in handling, they can be sent there in good condition. The day I left Pennsylvania received a good many. They arrived in good condition, considering the distance.

All the states are going to make a larger showing as fast as they get fresh fruit, and I am sure Minnesota will do the same. Several large vases of paeonies are being used to advantage, they attract people and many ask in regard to them.

On the east of the agricultural and horticultural buildings there is a space of several acres used principally for display of hardy roses in beds. When I left they were in full bloom and were a handsome sight. The beds of Paul Neyron were particularly attractive.

I was asked by several how we managed to have so large and strong a horticultural society. It shows that our work is being felt outside our own state, and it makes us feel justly proud to know that others, growing far more fruit than we, are envious of our society. One cannot visit the exposition without feeling that he has derived a great deal of benefit. There is more to see than any one can do justice to.

MINNESOTA FRUITS AT THE WORLD'S FAIR.

W. L. TAYLOR, HOWARD LAKE.

We were always proud of the display of fruit made at the Minnesota State Fair and at the winter meetings of the State Horticultural Society, but when we were permitted to attend the World's Fair at St. Louis, knowing the great amount of fruit raised in the so-called apple states and noting the large amount of money raised by some states for a horticultural display and the small amount appropriated by our own state, I thought Minnesota would not be in it at all. You will imagine my surprise when I arrived May 14th to find the prettiest display in horticultural hall with Minnesota's banner floating o'er it. Horticultural hall covers about five acres, and almost every state in the Union has a fruit exhibit here. Our Wolf River apple had attracted a great deal of attention, and visitors all declared it to be the largest apple in the hall. Our southern

cousins were amazed, and we would often hear the remark, "Why, we knew you were the 'bread and butter state,' but did not know that you aspired to rank among the fruit states." Once in a while some southerner would say, "Do you really raise such apples up there among the icebergs?" Or another would exclaim, "We use Minnesota flour, have Minnesota butter in our cellar, but we never tasted a Minnesota apple." Here is what H. M. Levering, master in chancery, Petersburg, Ill., said: "Your installation is grand, beautiful; while not so large as some, I would pronounce it the prettiest of them all." Missouri is putting up quite an expensive exhibit, California is in the lead as to amount of space occupied; Colorado has a beautiful display and deserves credit for her good taste; Illinois is not far behind in the race for supremacy; Washington is showing very highly colored apples as well as other fruit, and if they only had Minnesota's spicy flavor to help them out they would soon be in the lead. Texas has done herself proud and gained the good will of every one by presenting every visitor with a Cape Jessamine blossom.

We were pleased to find one of our former Minnesota Horticultural Society members in charge of the Texas exhibit, Mr. McHenry. Time has changed him somewhat, but he still has a love in his heart for Minnesota. Such a good fraternal feeling exists between the representatives of the different states that I think the fair will do much to make us a united people, having one common interest, the upbuilding of humanity. The state was very fortunate in securing the services of Mr. Thomas Redpath, of Wayzata, who takes pride in keeping our exhibit up to the highest point of perfection.

In the Palace of Agriculture can be seen wonderful displays of all the different states, as well as from every civilized country on the globe. This building has a floor space of more than eighteen acres, and if one goes through all the aisles and streets of this one building he must travel over fourteen miles. And by the time he visits the various buildings of the government, mines, transportation, liberal art, machinery, electricity, palace of education, fine arts and all the foreign and state buildings, he will be apt to take up a popular refrain, "It's too big, too big."

Do not allow apples to lie in heaps or in very large bins to sweat. Sweating ripens an apple in a very brief period. Get the fruit from the tree into the hands of customers as quickly as possible. But if it is not to be marketed at once; then store in a well-ventilated house or, better still, in cold storage. By changing the air during the cold nights of autumn and spring, keeping the house closed when the air outside is warmer, apples can be carried past the autumn surplus to better prices later on.

Secretary's Corner.

HONORS FOR MINNESOTA FRUITS.—"To Minnesota was awarded the honor of having the best completed exhibit of fruits in glass jars at the opening of the St. Louis Fair."—American Fruits, June, 1904.

BEST MINNESOTA APPLE FOR MAKING CIDER.—Is there anything better than the Transcendent as a cider apple for Minnesota? This variety being so subject to blight few want to plant it, and what is there that can take its place for cider purposes?

FRUIT IN THE RED RIVER VALLEY.—A letter from Peter O. Vangen, Climax, Minn., (in the Red River Valley not far from Crookston) says: "I examined my apple trees and the following varieties showed bright wood: Anisim, Charlamoff, Virginia, Whitney, Briar's Sweet; the following showed more or less discolored wood: Wealthy, Longfield, Good Peasant, Patten's Greening and Hibernal.

IMPROVEMENT IN THE MINNESOTA FRUIT EXHIBIT AT ST. LOUIS.—There have been added recently to this exhibit a colleetion of some fifty glass jars of assorted fruits put up by the Jewell Nursery Co. These have been arranged by Mr. Redpath along the upper shelving and just in front of the mirrors, where they will show to the best advantage. We hope to publish soon a photograph of the exhibit with its new adornments.

NORTHWESTERN GREENING APPLES FROM THE CELLAR IN JUNE.—Prof. S. B. Green has been keeping a small quantity of Northwestern Greening apples in his cellar, at his residence in St. Anthony Park, and they were found in good enough condition the first week in June so that he was able to send a peck of very nice specimens to St. Louis for display at the Minnesota fruit exhibit. The fruit was kept without any special care in an ordinary cellar.

TOPICS FOR THE ANNUAL MEETING.—The program for the annual meeting is now in preparation and topics in part selected. There are undoubtedly subjects that many of our members would like considered that may not be thought of by the officers of the society. If you will kindly write to the secretary in regard to any such subjects that you consider of special worth for this coming gathering you will to that degree assist the officers in this work.

DEATH OF GEORGE A. STAGER.—A clipping from a St. Cloud paper announces the death of Mr. Geo. A. Stager, husband of Mrs. Jennie Stager, who is so well known to the members of our society as a regular attendant for many years at our annual meetings. Mr. Stager was connected with the St. Cloud reformatory as superintendent of carpentry work. He was considered in good health and passed away after a few days illness only, at the age of sixty years.

"AMERICAN FRUITS."—This is the title of a new monthly issued by American Fruits Publishing Co. at Rochester, N. Y. Judging by the first number it will prove to be a publication of much practical value, especially to fruit growers who have a shipping interest to consider. A sample copy can undoubtedly be had by application to the publisher. Subscription rates are placed at $1.00 per annum, although they are making special limited offer of 50c for this year, as we understand.

HORTICULTURAL MEETING AT GLENCOE.—Upon invitation of Capt. A. H. Reed, who is enthusiastic in his efforts to organize a strong horticultural society at Glencoe, Prof. S. B. Green and the writer visited that place on Tuesday, June 28th, attending during the day a dairyman's convention and in the evening a meeting of those interested in horticulture. On account of a misunderstanding as to the place of meeting and the stormy evening the attendance was light, but those present were sufficiently interested to have made the gathering well worth while. A pleasant feature of the meeting was three rows of little girls in white dresses with bouquets, to whom Prof. Green talked very pleasantly for a half hour before the general subject of the meeting was taken up. There should be such societies organized and meetings held in every community in the state.

MINNESOTA STRAWBERRIES AT THE WORLD'S FAIR.—On June 15th the first case of strawberries was sent from Minnesota to the World's Fair, being contributed by Frank I. Harris, of La Crescent. The next shipment was made the following Monday, and since that time strawberries have been going down there in a steady stream in sufficient quantity to keep the Minnesota exhibit amply supplied, and in the main they are coming in very fine condition. Under date of June 23rd, Mr. A. K. Bush who was visiting the World's Fair at that time says: "The 64 plates of strawberries we had on exhibition yesterday were so attractive that about every person who passed the booth stopped to look them over and say good things about the general appearance and high quality." Since the time above mentioned a large amount of strawberries have been sent, so the exhibit must approximate at times 200 plates.

REFRIGERATORS FOR WORLD'S FAIR SHIPMENTS.—Ten refrigerators have been constructed for use in shipping small fruits from Minnesota to the World's Fair. They are made to hold 48 quarts of strawberries or 96 pints of raspberries, and will carry about sixty pounds of ice. Reports from the Minnesota exhibit as to the condition of fruit received in them indicate that they are maintaining a satisfactory temperature. These refrigerators have been placed at the more central fruit growing points of the state from which the largest shipments are being made. From other points fruit is being sent in ordinary cases, and the weather continuing moderate this fruit is also reaching the fair in fine condition. Special care should be taken in gathering fruit for this purpose to select berries that are a little under ripe; over-ripe berries it is useless to send to St. Louis. They become mouldy before they arrive there even. Invariably gather fruit for this purpose before it is quite ripe

A. K. BUSH AT THE WORLD'S FAIR.—Mr. A. K. Bush was present at the World's Fair as assistant in the horticultural department during the last two weeks in June. His report will probably appear in the August number. Referring to the exhibit in the course of his correspondence he speaks of "the fine collection of Minnesota fruits which covered the shelving and filled the various glass containers. The Minnesota fruit exhibit is certainly a credit to the state and to the people who collected and installed it. The average of 300 plates compare very favorably with our next door neighbors in the building, the states of New York, Washington, Pennsylvania and Rhode Island. We don't show the quantity of apples that the first named states have in heaps and piles, but our variety is fully equal to theirs. The booth is very tasty in design." And again he says "the Minnesota fruit exhibit, especially of strawberries, received many compliments." His letter of June 25th says, "Our strawberry exhibit excels anything that has been put on the tables up to date, so we are told."

NEW FRUITS AT SOUTH DAKOTA EXPERIMENT STATION.—In a letter under date of June 21st, Prof. N. E. Hansen, says: "The numerous new creations in fruits at this station came through the winter in very good condition as a whole. If my 225 varieties of hybrid strawberries ripen in time would like to send some to your summer meeting. I hope to select the best three or four out of the lot and make a distribution next season. My Sand Cherry hybrids appear promising. Some are hybrids of the Sand Cherry with large Japanese plums and hence ought to give us something pretty good in quality and of fair size."

MINNESOTA STRAWBERRY CROP.—Notwithstanding the considerable injury to the strawberry fields in many parts of the state and especially where the snowfall was comparatively light, the unusually favorable weather, with plenty of rain and not too much heat, has brought out an unexpectedly large strawberry crop this year, and with the new fields which were planted a year ago this spring it is probable that the Minnesota strawberry crop will equal the very large one of a year ago. In many cases sufficient attention is paid to the growth of this berry so that it is becoming a large factor in the income of the fruit growers of the state.

COLD STORAGE APPLES FOR THE WORLD'S FAIR.—Of the apples that are being taken out of cold storage every ten days for the Minnesota exhibit at the World's Fair the Wealthy still holds the lead. Of the last lot taken out at St. Louis on June 19th, Antonovka, North Star and Peerless were entirely worthless. Other varieties, including Wealthy, Anisim and Yahnke and a box of seedlings, were in good condition. About 44 bushels of apples are yet in cold storage for the World's Fair exhibit, most of them of varieties that have heretofore shown excellent keeping qualities.

STRAWBERRIES AT THE SUMMER MEETING.—There were shown at the late summer meeting sixty-six varieties of strawberries. There was less competition than usual, two of the principal berry exhibitors, R. H. L Jewett and Benjamin Hoyt, not being present. Senator Dunlap stands at the head of the list as to number of plates of any one variety exhibited. Bederwood, Warfield and Clyde stand next; Sample is next in the list, followed by Enhance and Brandywine; then Crescent and Splendid. There was a large number of other varieties that had two plates shown. Senator Dunlap is evidently the favorite with the Minnesota berry growers.

MAKE EARLY ENTRIES FOR THE STATE FAIR.—A splendid premium list in the horticultural department is offered to the growers of fruit and flowers at the coming state fair. Over $1,000 is offered on the fruit list alone and about two-thirds that amount for flowers. This should insure the finest fruit and flower exhibit ever made at our fair. What have you that you can enter for this display? Address E. W. Randall, Hamline, for premium list if you have not one and make your entries early and prepare for the occasion.

APPLES AND PLUMS WANTED FOR THE WORLD'S FAIR.—A good many offers of fruits for the fall exhibit at the World's Fair have already been made, but it is desired that every fruit grower in the state who is interested in this exhibit should have an opportunity to contribute. We want especially early varieties of apples and plums, such kinds as can be sent the first of August or thereabouts. Every variety of fall fruits that is grown in our state should be shown at the World's Fair. What have you, dear reader, that you are willing to contribute to this purpose? Please write the secretary in regard to it without delay that the necessary arrangements for shipping, etc., may be made.

A BLOCK OF OKABENAS IN ORCHARD OF MR. H. F. BUSSEE.

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APPLE ORCHARDING IN MINNESOTA.

H. F. BUSSE, MINNEAPOLIS.

The experience of the writer, which extends over a period of twenty-five years, began in the spring of 1878, when he set out fifty two-year-old trees consisting of the following varieties: Transcendent, Hyslop, Briar Sweet, Virginia and Duchess.

These all grew well and four years after planting came in bearing. Six years after planting they started to blight. Nine years after planting most of them were dead with the exception of the Briar Sweet, Virginia and Duchess. Wishing to give the Transcendent and the Hyslop another trial, these were replanted with the same varieties. These trees grew well for a time, but upon coming in bearing again blighted.

This experience caused me to believe that it would not pay to plant these varieties in this location. However, I was determined to find some variety which would successfully replace them, and, after hearing that the Russian varieties were hardy and adapted to different soils I determined to try these in their place. This move proved to be a complete success, and as a result I now have the Russians, Briar Sweet, Virginia and Duchess in the old orchard. These trees are now all alive and bearing fruit every year. This proved to me that apples could be successfully raised in Minnesota and made me still more anxious to have a larger orchard.

Twelve years ago with a view to increasing the size of my orchard I set out forty more Duchess. These are in thriving condition, and from them I harvest each year a large crop of apples. So far the orchard was a complete success and gave me much satisfaction. However, the receipts from the sale of apples were small, and I now saw no good reason why the orchard should not be made to pay and pay well.

I then started my commercial orchard, in the spring of 1895, by setting out 600 more trees. Of these 200 were crabs and 400

standard apples, comprising about fifteen varieties, among them the Hyslop and Transcendent, for, as you all know, the public still cries for them.

These were given the most favorable location, being planted on a high knoll having a northwestern slope, which my experience goes to show is the most favorable location possible. This time the Transcendent and the Hyslop grew well and passed the period when they had previously blighted and bore fruit for three years. This was a source of great satisfaction to me, as I now thought I had succeeded in finding a location where these varieties would do well. But in June and July, 1902, these trees started to blight with fruit upon them. This was discouraging enough, but, to make the matter worse, some of the Wealthy and the Virginia crabs also blighted. This convinced me that the Transcendent and the Hyslop must have given the disease to the Wealthy and the Virginia, since I had never known these two last varieties to blight in my orchard. The Wealthy and Virginia blighted badly both in the forks and in the body of the trunk. When the tree is so attacked, death is sure to follow. It is my intention to replace these trees with some other varieties which in my experience are long lived and free from blight.

At the present time my orchard contains from 1,500 to 1,600 trees, young and old, and is in first class condition, practically free from blight and bearing heavily. In fact, some of the young trees planted only eight years ago bore from one to six bushels per tree.

In regard to the varieties of apples which are to be recommended either for home use or commercial purposes, I am led by twenty-five years' experience to recommend the following varieties: among the crabs, Shields, Lyman's Prolific, Tonka and Virginia; among the standard apples, Duchess, Okabena, Peerless, Patten's Greening, Wealthy, Hibernal and Northwestern Greening.

In addition to the crabs mentioned in the above list, I also have growing in my orchard the Florence, Winona Beauty and Montreal Beauty, but as these are not yet in bearing I can hardly give an opinion as to their value. There is one variety to which I wish to call your attention. This is a seedling crab, ten years old, raised from seed by me and not as yet named. This crab is about the size of a Florence and a little darker red than a Transcendent. Two points in favor of this seedling crab are: first, it sells for the highest price in the market; and, second, it has been absolutely free from blight for the past ten years.

Some Orange crabs which I raised last year could not be sold in the Minneapolis market on account of their color. Nevertheless

they are fine for pickling purposes, although they do not make good jelly.

I would advise any young planter to set out both crabs and standard apples, since there is always a good demand for both. During the past year the crop of crab apples was small, there being but few upon the trees and these were small and scabby from fungous disease. My own yield from 250 trees was but fifteen bushels. The crop of standard apples, on the other hand, was the largest that I ever raised and sold at good prices.

H. F. Bussee and his boys harvesting Duchess.

In conclusion, I would say that my own experience has been satisfactory on the whole and that there can be no question about successfully raising apples in Minnesota and making a good living out of it. Those of us who started at an early day know some of the drawbacks to overcome, lack of home grown stock for planting, few varieties and many other difficulties. One by one these have been removed by constant work and perseverance until at the present time the demand for Minnesota apples to feed the great northwest is rapidly increasing, while many medals from eastern states, won in the face of Michigan and Missouri competition, prove that the

Minnesota apple is where it belongs, at the top, and that apple orcharding in Minnesota is a subject well worth our consideration.

The Chairman: I will say that I visited Mr. Busse's orchard this past autumn, and it was in very fine condition. It is a very fine orchard. I never saw Okabena look as well as they did in that orchard. It has proved very productive with him. It is the same with the Patten's Greening. I think Mr. Patten has reason to felicitate himself on originating that apple, and this society is fortunate in getting it on its list. It is going to make a great record in this section. I think any one may regard it as the highest honor to originate an apple of that kind.

Capt. A. H. Reed: Why do you consider a northwest slope best for the apple orchard?

Mr. Busse: I have two reasons: one is that there is more air on that side, and the other is that the north side is not so much subject to drouth as the south side. Otherwise, we can get good trees on a south slope by mulching and keeping the ground in good condition.

Mr. Elliot: That is a good point; the drouth is not so severe on a north slope as it is on a south slope.

Mr. Hall: Do you set a tree out that blights? Do you think it affects the other trees?

Mr. Busse: It depends upon the varieties. I said in the paper that the Hyslop will not do.

Mr. Kellogg: What kind of soil have you?

Mr. Busse: Heavy clay subsoil.

Mr. Kellogg: Do you cultivate your orchard?

Mr. Busse: I cultivate and mulch both.

Mr. Taylor: How far apart did you plant your trees?

Mr. Busse: I planted the old orchard 14x16, but those Duchess spread out so I can hardly get through them. Then I planted the next orchard 16x16. I found that sufficient for the Wealthy, but it is not for the Patten's Greening, Hibernal and such varieties. I set out some sixty or seventy Patten's Greening about six years ago, and we have a hard time now getting through with the wagon to gather the apples. They ought to be set about twenty feet apart. I started a new orchard a year ago last spring, and I set those trees 18x18.

Mr. Kellogg: What kind did you mostly plant?

Mr. Busse: They were mostly Wealthy. Sixteen by sixteen would do for Wealthy and some upright trees, otherwise I would set them 18x20 feet apart; that is not too close. The more sun and air you can get into the trees the better.

Mr. Philips: Sixteen by thirty feet is still better.

Mr. Busse: Perhaps so, but I am not so rich in land as some people.

Mr. Barnes: Which do you prefer, a low top or a tall bodied tree?

Mr. Busse: I would take the Wealthy with as low a top as I could get it, but the Patten's Greening I would not have with so low a top. The Wealthy I would have with branches about two feet from the ground.

Mr. Brackett: What do you consider the most profitable tree in dollars and cents?

Mr. Busse: That depends a good deal upon the season. Some seasons one variety does a little better than some other variety. We have Duchess that I would say pay as well as anything we have in certain seasons, but the Okabena pays as well on the whole as any variety I have in the orchard, and they are in bearing every year. They bear well every year and more heavily than most varieties. I would place the Patten's Greening next in the list; as Prof. Green said, it is a money maker. It was the best money maker I had two years ago, although the Hibernal turned out well. They were so large I think the grocer said there were sixty apples in a basket. He said he could sell them two for a nickel and make a good profit on them

Mr. Barnes: Did you plant them straight up and down or did you lean them?

Mr. Busse: I slanted them to the south and have practiced that method for several years. I did not do that in the first orchard I planted, but since then I have done so. I think it is a good idea as it seems to keep them from splitting out in the crotch.

Mr. Barnes: Do you notice any benefit by planting the lower branches toward the south?

Mr. Busse: I always try to get the lower branches toward the southwest side.

Mr. Barnes: I guess you understand your business. (Laughter.)

Mr. H. H. Pond: Does the Patten's Greening show any disposition to decay?

Mr. Busse: No, sir, not enough to speak of. Almost any apple will rot. I find even the Duchess will rot, and the Patten's Greening will rot now and then. I have heard that said against it, but I could not say that of my own experience. They will rot some, of course, but no more so than any other apple and not enough to make particular mention of it. I think when the Professor was in my orchard the apples were all perfectly sound.

The Chairman: Does it drop with you?

Mr. Busse: No, sir, it does not.

Mr. Taylor: Do your customers inquire for any particular variety of apples?

Mr. Busse: Well, people will ask me, "What varieties of apples have you got?" I say to them, "A good variety." Then they say, "Sweet or sour?" I say, "Both." (Laughter and applause.) I simply give them a trial, cut a piece out of an apple and let them try it. There is no trouble about selling them after they taste the apples. Last fall after I was all sold out, I could have sold 500 bushels more if I had had them. I have got nothing but good, sound apples, and I can get a good price for them.

The Chairman: How much do you get out of your orchard?

Mr. Busse: Well, I can't tell exactly. I have so many trees that were not yet in bearing. I suppose I had in the neighborhood of three acres in bearing.

The Chairman: How much did you get out of them, say about $500.

Mr. Busse: Well, yes, I guess about in that neighborhood.

Capt. A. H. Reed: How much per bushel did you get?

Mr. Busse: $1.25 and $1.00 a bushel; they usually netted me $1.00 a bushel. I always sold the Patten's Greening and the Okabena for $1.00 a bushel. The Okabena comes at a time just after the Duchess and just before the Wealthy is ready.

Mr. Taylor: The tendency is to advise people to set trees a little further apart than they have been in the habit of doing. Quite a few people advised me to set my trees further apart. They are fruiting now. I have had thirty years' experience, and if I had set them thirty feet apart they would always stay far apart. If trees are set close together one tree is a protection to its neighbor, and it is a good deal better to set them close together than it is to set them so far apart. A rod apart gives 160 to the acre, and they will give a good deal larger yield to the acre.

Mr. Probstfeld: Mr. Busse said his Okabena were in good condition at this time. I had to eat mine right away or lose them. How do you account for that? He says his are in good condition at the present time..

Mr. Busse: I have some Okabena at home, and they were pretty good the other day.

Mr. Probstfeld: I keep my Wealthy way along to the middle of January.

Mr. Barnes: May I offer one word of suggestion, and I would not feel like going home without saying a few words. To you people who contemplate planting an orchard let me give you this advice: Plant your trees together close north and south; plant two varieties in the same row. Plant the Patten's Greening and the Northwestern Greening alternately, and the Patten's Greening will pay for itself before the Northwestern will come into bearing, and if you have them close together you lose no time, money or labor in cutting out those trees. You will lose no money in any event by planting close together north and south.

STARTING LOCUSTS FROM SEED.

PROF. S. B. GREEN.

How can I start a locust plantation from seed? What variety should I select and where can I get seed?—F. J. Empenger.

The only locust that would be hardy enough for satisfactory growth in your section is what is known as the yellow or black locust. The honey locust is too liable to kill back to the ground to be recommended for this purpose. The seed of this locust may be gathered about Minneapolis, and I should prefer to get Minnesota grown seed. The tree will be found quite hardy at Maple Plain, but it is not sufficiently hardy for general planting in exposed places in western Minnesota.

In handling the seed there will be poor success in making it grow unless it is treated with hot water before being planted, but when so treated it will grow quickly. The seed may be gathered during the winter, as the pods remain on the trees until toward spring.

NOTES ON FORESTRY WORK IN MINNESOTA.

GEN. C. C. ANDREWS, CHIEF FOREST FIRE WARDEN AND SECRETARY OF THE MINNESOTA STATE FORESTRY BOARD.

Mr. President, Ladies and Gentlemen: Pine County, in this state, contains 900,000 acres of land exclusive of water. The German state of Baden, which is smaller than Pine County, has 240,000 acres of state forest, from which it derives an annual net profit of $660,000. The kingdom of Wurtemburg is only a little larger than our St. Louis County, but it has 418,000 acres of state forest, from which it derives a net annual revenue of $4.00 per acre, which is a great deal more than our American farmers derive from their cultivated land. The kingdom of Saxony has 432,000 acres of state forest, from which it derives an annual profit of $4.50 per acre. In Saxony they have ascertained that the average annual increment per acre is 225 feet, board measure. They utilize there all parts of the tree, even some of the roots, so from that state forest they have an annual product of 97,000,000 feet of lumber, board measure, and the forest remains unimpaired. It even becomes more valuable from year to year. Now there are larger countries with these state forests. Prussia has 6,000,000 acres of state forest, from which it derives $9,000,000 annual revenue net, and France has 2,000,000 acres of state forest from which it derives a net profit of $1.91 per acre. In these cases the forests are not all together, of course. They are in scattered localities, and mostly on mountains and on sandy soil. These forests have good roads through them, and they are practically national parks, attractive for tourists, and our American travelers find great delight in going through them.

These are samples of what some of the European countries have been doing for a long time, and they show what could be done in this country. Of course the revenue of the forest would not be so large in this country as in countries thickly peopled, where labor is cheaper and a market is easier of access.

It is said we must wait until there is a strong public sentiment before we can accomplish much in forestry. There is a good deal of sentiment now for forestry. Governor DeWitt Clinton did not wait for any very strong public sentiment before he built the Erie Canal. They laughed at him and many called it "Clinton's ditch." He was a statesman, and he put it through. There was no very great public pressure brought to bear upon our statesmen in Minnesota, of whom Governor Ramsey was the leader, to provide by law that all the school lands should be sold for not less than five dollars per acre. It was because there was a statesman at the head of af-

fairs that it was done. He looked ahead and had it done. The consequence is that Minnesota now has a school fund of $15,000,000, which is likely to be increased at $25,000,000. What we need is a good, strong man in the legislature who will make forestry a specialty. We have friends in the legislature. They added twelve amendments to our fire warden law in our last legislature. They appropriated $20,000 to extend Itasca State Park. They passed a law authorizing the state forestry board to buy land for forestry purposes at $2.50 per acre, but they failed to appropriate the money. This was because there was no man in the legislature to make forestry a specialty, and until we have such a man we will make no particular progress in forestry in Minnesota.

Jack Pine grove, highest trees, about twenty-six feet high, on the thousand acres in Cass County, donated to the state of Minnesota for forestry by the late Ex-Gov. John S. Pillsbury. The Forestry Board has prepared a nursery on this land on which it will sow pine and spruce trees this spring.

We have been discussing forestry for many years in Minnesota. We have a forestry board which has been in operation five years. We have on this board such men as Frederick Weyerhauser, the greatest lumberman in the country, our friend Mr. Owen, John Cooper, who was president of the State Agricultural Society and a lumberman, Prof. S. B. Green, Dr. A. C. Wedge of Albert Lea, and others—in all nine members. We are equipped to plant trees on non-agricultural land, but the legislature has given us no money for that purpose.

Let us suppose you are members of the finance committee, or the committee on appropriations in the legislature. You are friendly

to forestry, but here comes the governor and prominent politicians and say they must certainly have $100,000 for the St. Louis Exposition; they must have a lot of money for the state university; they must build some more buildings at the state experiment station; they have four insane hospitals and many other public institutions which must be supported. Members from all parts of the state are clamoring for money, and they will have it; and while they are friendly to forestry, unless you have a man who makes forestry a specialty and fights for it with energy, we shall not get money for forestry.

Now I trust that when you go home and in due time come to elect senators and representatives you will say to the candidate, "My

Non-agricultural land near Ely, Minn., from which white pine forest has been cut.

friend, promise me one thing—that you will give earnest support to forestry measures."

What forestry means for Minnesota is simply this: The remaining original pine timber will be cut in the next fifteen years. Some second growth pine, if protected from fire, will then be cut from year to year, but it will not be as good as the original growth, and there will not be enough of it for home consumption. Lumber will be dearer, and our great lumber industry will decline. There are, however, fully three million acres of waste land in scattered localities which if planted with pine would in time become normal forests yielding forever a supply sufficient for our home need. Such forests would by their growth perpetually yield a net annual revenue on

the capital invested of three per cent compound interest, besides many indirect benefits. On such waste, sandy land it will take on an average about eighty years for a crop of pine trees to grow to merchantable size. Individuals cannot wait so long for a crop, and they will not engage in the business. The state, to whom time does not occur, must undertake the work by purchasing waste land and planting it with pine.

The forestry board is ready to go to work. Will you see that the legislature provides us with the means?

Mr. S. M. Owen: The gentleman was speaking about the income of the state forests of Europe. What would the income be from those lands if not in forest?

Gen. Andrews: Practically nothing. The lands are mostly unfit for agriculture.

STARTING AN ORCHARD—SIX YEARS' EXPERIENCE WITH 1,100 TREES.

C. C. DIKE, WHITE BEAR LAKE.

In starting an orchard for commercial purposes, the object is to make money, and the questions where to plant, how much to plant and what to plant come in at the very first. A northeast slope, of good timber soil, and well drained naturally or artificially, is generally considered by experts as the best. On my land I have all the slopes. They are quite short ones, from one to two hundred feet, and I have both apples and plums on slopes pointing north, south, east and west. These slopes with me make no difference as I can see—I think good soil and drainage of more importance than slopes, and I think any land on any slope that will produce good crops of corn, oats or potatoes can be made to bear apples and plums profitably.

About how much to plant: If it is for a home orchard and pleasure, perhaps one hundred to one hundred and fifty trees, selected with care from the list given in the Minnesota State Experimental Bulletin No. 83, edited by Prof. S. B. Green, will be as well as one could do. Out of about a dozen varieties I think the De Soto and Hawkeye have been the most profitable among the plums. The Stoddard has also done well, and with me closely resembles the Hawkeye. If I were to plant another orchard of 1,000 or more trees, I think I should plant very few plums, and in apples the Wealthy, Duchess and Patten's Greening would probably be about all the varieties I would have. If we can get the best early, medium and late apple with only three varieties it would be much better than to have more. I think it will be very hard to find for the

vicinity of St. Paul or Minneapolis three apples that will produce more money than the Duchess, Wealthy and Patten's Greening.

In crabs I have the Orange, Whitney, Early Strawberry, Virginia, Martha and Minnesota. With me none of these have been profitable for market. I am told that the Florence, Shields and Lyman's Prolific will give the best early, medium and late crabs for this locality. All are good crabs and prolific bearers.

Now about how much to plant: Judging from what experience I have had I think 1,000 or more trees will give quite a business or a good living for an average family, while with less than that number it would be difficult to make a living without depending on some other vocation to help out. I used to think the plums in this vicinity would be more profitable than the apple, but the last two years with me it has been the reverse.

In laying out my orchard I drove stakes to sight by and then used the team and plow for marking the rows. On reaching the end of the row, I returned with the plow in the same furrow, thus going twice in a row and throwing out the earth wider and deeper than one could by going once in a place. I also found it easier to make the rows straight and the same distance apart between all the rows. In marking the cross row I also went twice in a row. This plan aided considerably in digging the holes.

If you make the rows 20x20 ft. each way it gives you about one hundred and eight trees per acre, or 4,320 trees on forty acres. I planted my orchard much too close. I believe better results will be obtained with plums by not planting closer than 20x24 ft., especially with the spreading varieties, and apples not closer than 20x25 ft. for the upright growers and 25x30 ft. or even 30x30 ft. for the more spreading kinds, like Hibernal and Lyman's Prolific. I understand some large orchards will be planted in 1904 west of Minneapolis, allowing only a sq. rod per tree, or 160 per acre. I think this is too close. Such close planting with low heading will make it very hard to use clean cultivation or even cultivate at all without close pruning after the trees come into full bearing.

On very rich soils it may do to have the holes as small as two and a half feet in diameter and two feet deep, but I think a more liberal hole will be better; and on poorer soils with stiff subsoils I would not have a hole less than three feet in diameter and thirty inches deep. In digging the holes on my land, which has a stiff clay subsoil, I had all the soil, or top earth, placed one side of the hole and on the same side with all the holes, and all the bottom earth thrown out on the opposite side of all the holes. Then when I came to set the trees, I had no difficulty in finding the best earth. In digging

holes if you find the water coming in and remaining there the ground must be drained, for apple and plum trees will not live long with roots under water.

When I came to choose my trees, I chose two year old root-grafted trees. Local nurseries will generally give better results than those from greater distances. It is easier to get them in good condition. Mine were shipped and received in good shape. I immediately heeled them in the ground, trimming off all broken and bruised roots, and trimming off about one-third of the last year's growth from the tops. I took great care not to leave the roots exposed to either sun or air much more than a minute at any one time; also kept the roots well watered.

When all was ready for setting I had a man distribute the trees in lots of about fifty each, in places convenient for setting, and heeled them in. For getting water I had some holes dug in a swamp near by and planks run out to the holes. I had a boy to take the trees from the heeling-in trenches and drop them in the holes. I had three good men with shovels to handle the earth. Coming to a hole I would take a tree and hold it in the hole till it stood six to eight inches lower in the hole than it stood in nursery row and note how much earth would be required to fill the hole up to the roots. Then I had the shovelers fill the hole up to the required point and level it off. Now, I took my tree, got into the hole, spread out the roots as naturally as I could and had the men sprinkle fine, rich earth over the roots till they were covered about three inches deep. After this I had the men shovel as fast as they could and I trampled the earth in hard, taking pains to have the earth packed in close around the tree and all around the edges of the hole, so as to leave no air spaces to dry out the roots. I filled the hole so that when finished it would be about two inches lower than the surrounding ground. Now the water man came along and holding the pail breast high or more, slowly poured the water so that it fell around the butt of the tree and disappeared down among the roots, carrying considerable fine earth with it and thus completely filling all the small spaces that might escape the hand filling.

In setting the trees I tried to have them all lean a little to the southwest. Now after finishing a row I would go back and see if the water had loosened up the roots so as to throw the tree out of line and if any needed it would straighten them up and firm the ground around the tree.

After the holes were prepared I set out in one day three hundred and fifty in this way, and I think I can set 1,000 trees in three days after the holes are ready.

In places where water is not handy a water tank and pump might perhaps be secured from some one that had a thresher and a more liberal supply of water be used with advantage. I gave the trees, I think, two or three waterings after the setting and leveled off the ground with team and drag and cultivator. The heap of bottom earth left on the ground I spread around with the shovel.

The first season I aimed to go round once in about ten days and stir up the ground around each tree for a distance of about six feet in diameter with a four-tined hoe or a garden rake, thus giving the trees a dust mulch. The first year I planted corn and beans for a crop and cultivated freely. The second year I planted corn, and after this I let the trees have the ground. I neglected to put on tree protectors the first year, and this prepared the way for numerous sun scalds.

Late in the fall I gave the ground a good deep cultivation and mounded up the earth with a spade around each tree a foot high or more for protection against mice. That winter we had deep snows, and it drifted badly in the apple orchard. The mice and rabbits girdled about sixty trees so that they died. Since then I have made it a point after every snow storm that left the snow deep around the trees to stamp the snow down hard around the trunk of the tree. I have had very little trouble from the mice since.

The cost of setting out the first seven hundred trees was about five cents each. Later settings have cost more; labor was higher, and I did not run so large a force. It is economy to have men enough to fill all the stations so none will have to do double duty.

I have not sprayed much. I think if I had used the spraying calendar faithfully for the last three years I would have done much better.

So far I have not done much manuring. I have used ashes freely on the apples with good results. The trees made a good start the first year. The second and third years many of them made a growth of from three to four feet and were so tender the winds switched them badly. Since coming into bearing the growth has been slower, and from now on I intend to manure freely, also do more mulching.

So far I have depended on dust mulch mostly; where the ground has been steep and washed badly, as it has in several places, I have put in raspberry brush and coarse hay, then thrown on earth and cultivated same as before. These places have not washed to do any damage the second time.

The first, second and third years I tried to keep off all buds and branches that were not needed to make a good top, and if this is faithfully kept up through the life of the tree no heavy pruning will be required.

The fourth and fifth years I was very busy and pruning got neglected. The consequence was this year I had to do considerable pruning with the saw.

Limbs and branches for shade and protection from sun scald are very desirable on the south and southwest sides of the tree. By using a little care in leaving branches and buds on these sides of the trees and taking more of them on the north side much can be done in giving proper shape to the tree. Branches that cross or rub each other should be cut out, and where terminal branches are cut back the tendency will be to make the top too bushy and thick. In such cases cut out all superfluous branches, thus letting the sun in to shine on the fruit.

Some trees by neglect will get badly out of shape. Such trees will need close attention each year in cutting back one half of last year's wood growth, leaving the top bud on the side of the branch facing the direction to which it is intended to divert the growth. By this treatment there will be little difficulty in shaping the tree into any desired form.

Space forbids prolongation of the subject. I have had the usual trouble with blight, sun scald, leaf blight, fungous growths, aphis, borers, curculio, plum pockets, gophers, etc., etc.. These troubles also include the small boy, who wants and tries to get his share of all he can see.

Mr. Probstfeld: Is the Patten's Greening the same as the Duchess No. 3?

The Chairman: It is the same thing.

Mr. Philips: What do you understand by air drainage?

Mr. Dike: Having the ground so situated that there is always a free circulation of air or wind.

Mr. Wm. Oxford: I would like to ask him why the lowest land is not best for plums?

Mr. Dike: I don't know; I thought so when I planted my first plums.

Mr. Oxford: When I came to this country in 1852 there were plenty of wild plums growing close to the creek in the low land. My wife and I went out one day and got eight bushels. I planted some of those trees, and they have never done so well since. I understand the lower the land and the more shade the trees have the better the plums will be.

Mr. Dike: I planted fifty trees on the richest ground I had, and the water managed to stand there enough so that the trees were all killed.

The Chairman: I think Mr. Oxford means by low land a place that is well drained, where the water does not stand.

Mr. Oxford: Yes, it drains all right; it is right on the creek, it is river bottom land. The De Soto is about eight miles from us.

Mr. O. W. Moore: If you have fall enough so it will carry off the water, and you will tile drain that land, you will have no difficulty whatever in growing plums there.

Mr. Dike: I feel very certain of that.

GROWING EVERGREENS FROM THE SEED.

FRED MOHL, ADRIAN.

As a general thing, it does not pay an amateur to raise evergreens from seed, for the reason that two-year-old, 4 to 6 inch, seedlings can be bought from nurseries at a nominal price per thousand.

In raising evergreens from seed, be sure you obtain good, sound seed, which may be bought at from 25c to 80c per ounce. Prepare your seed bed thoroughly. Sow broadcast and evenly. Go over the seed bed with a hand roller to press the seed firmly and evenly into the seed bed. Sift on a covering about one-half inch deep of fine sand. Build a lattice cover over the seed bed, say three to four feet high, placing the lath about one inch apart; cover both sides and top. It is well to scatter wood ashes over the seed bed to prevent insects from eating the seed when it sprouts. If the bed gets too dry, sprinkle it; if too wet, scatter dry sand over it, which will absorb the surplus moisture.

When the seed comes up, keep the bed clean and free from weeds by hand picking. The seedlings may remain in this bed for two years, when they should be transplanted into rows one foot apart and six inches apart in the row. It is best to have a pail filled with mud and water in which to place the roots of the seedlings when moving them to the new bed, in order not to allow the sun and wind to dry the roots for one minute, as the sap in the root of an evergreen is more gummy than in the deciduous trees, and if the circulation is checked it is next to impossible to restore it, and the tree is practically dead. The root must be kept moist continually from the time it is taken out of the ground until planted.

The best way to transplant the seedlings is to use a twelve inch wide board, driving stakes in the ground at each end to hold it in position. Stand on the board, and with a spade cut a trench perpendicularly along the edge of the board. Take the plants one at a time and hold them up against the perpendicular earth-bank along the board, and with your hand, push the dirt up against them to hold them in position. After the trench is filled with plants, rake on dirt until nearly full, and with your feet

press firmly toward the bank of the trench, making the plants so tight in the ground that they can hardly be pulled out. After the row is firmly tramped, rake on more earth until you get it level. This last covering should be left loose to form the dust blanket and retain moisture in the ground. Now take the board and lay same on the other side of your tree row and proceed as before until you have the plant bed full. Do not allow the roots to become bunched, but spread them out so that each fibrous root has an abundance of well pulverized soil firmly about it.

It will be necessary to again have a lattice covering over this plant bed, as well as on the side, for the first year, so as to afford

Scotch Pine, Austrian Pine, Norway Spruce and Arbor Vitae grown from the seed at place of Fred Mohl, Adrian.

partial shade from the sun and protection from strong winds. The plants may grow in this bed for two years, when they should be moved to their permanent place, but, as a rule, nurserymen transplant evergreens three times; the third time they are usually planted four feet apart between the rows and two feet apart in the row. A better root system is obtained each time they are transplanted, consequently a better tree to plant and much more likely to grow.

The plant bed should always be kept free from weeds, and by the use of hoe and garden rake the dust blanket is preserved and soil-moisture retained. A cloudy, damp day should be selected for transplanting evergreens.

TREE PLANTING ON MINNESOTA PRAIRIES.

GEO. L. CLOTHIER, WASHINGTON, D. C.

The desirability of forest plantations on the prairie farms of Minnesota is generally conceded. Such differences of opinion as exist concerning the establishment of forest plantations usually only embrace questions as to the most desirable species, the proper location of the plantations, the best methods of establishing the same and the profits likely to accrue from planting. The following remarks will be confined chiefly to the discussion of these disputed questions.

Geo. L. Clothier, Washington, D. C.

Selection of Species.—Among nurserymen and general tree planters dogmatic assertions in the discussion of the merits of different species are likely to be made. Judgment is too often based on results gotten from temporary trials. A new species or variety comes before the public, and everybody plants it without regard to its limitations. The fact that it sells well is about the only quality considered by the average nurseryman. The question as to what the future tree will develop into seems seldom to concern many of our dealers. An instance illustrating this point is as follows: Three or four years ago some enterprising dealer took it into his head to advertise the diamond willow as a good fence-post tree. Everybody

began to ask for diamond willow, and dealers tried to supply the trade. These willows were sold to farmers for fancy prices and planted on the prairies of Minnesota and the Dakotas right on hundreds of farms where this worthless shrub of a willow was growing wild along the banks of every pond and water course. Nobody seemed to have cared to enquire whether or not the diamond willow attains the size of a tree or is long lived or is adapted to prairie planting. Many a Minnesota farmer today is sick of diamond willows. Such experiences as this disgust and discourage tree planters, and hinder the whole movement in favor of forestry.

The use of the white willow in Iowa is another illustration of the extensive planting of a species without knowledge of its disadvantages. In the early settlement of the prairies of Iowa, the farmers thought it would be good policy to plant the white willow in single rows on both sides of public highways. For a few years it seemed that these plantations would be a great source of profit to the owners, but now one hears only condemnation of the white willow where it was so popular twenty years ago. To be sure, it thrives, but it has become a nuisance in many ways. Its roots stop up the tile drains; it shades the roads so densely that the surface moisture does not easily dry out, and mud holes are now common where the roads were always good before the planting of the trees; it causes snowdrifts to fill up the highways.

The one mental attitude which is responsible for more failures in tree planting than all other causes combined is the desire for rapid growing species. The willow grows very rapidly, hence it appeals to the pioneer planter. The cottonwood, box elder and silver maple are trees very similar in behavior. They have been planted in western Minnesota, Iowa and the Dakotas far too often for profit. For the first few years they grow very rapidly on almost any kind of soil. If planted on upland with a stiff clay subsoil, these species begin to become stag-headed when about twenty years old, and in twenty years more the plantation is usually dead, and only its remnants are left to disfigure the farm.

Instead of demanding that a species be a rapid grower, the planter should ask that its growth be long continued, though it may be slow. The greatest forces in nature move slowly, silently and often unnoticed. With living creatures it is generally true that the most ostentatious lead an ephemeral existence, while the unpretentious species live on and thrive after their fast competitors have perished and been forgotten. This is just as true of trees. Minnesota planters who contemplate the establishment of permanent plantations on the prairies should consider the merits of such frugal

species as the hardy conifers, oaks, ashes, elms and hackberry. There is no doubt but that this list of desirable species will be widely extended in the future as experiments demonstrate the adaptability of other species. It is rather certain, however, that the future list will contain slow growing species rather than rapid.

By proper selection of seed from the northern limits of distribution, it is very probable that walnut, hickory and other valuable hardwoods may be added to the list of desirable trees for planting in western Minnesota. The red and bur oaks are the most hardy species of this genus.

The planting of the more fastidious conifers, such as white pine, in the Red River Valley is not advisable, yet experiments in this region with the balsam fir, arbor vitæ, white spruce and European larch should be made. It is an indisputable fact that evergreens are more desirable on prairie farm plantations than deciduous species. This is owing to the protective effect of the foliage in winter.

Selection of Site.—The farmer tree planter should give mature deliberation to the selection of the site for his grove. This matter should not be settled by chance. The considerations of site of primary importance are as follows:

1. Degree of permeability of soil and subsoil, rendering tree growth possible or prohibiting it.
2. Depth to ground water.
3. The proper planning of the fields and private roads on the farm, and location of public roads adjacent to the same.
4. Location of the buildings and farmstead on the farm.
5. Need of protection, such as windbreaks, snowbreaks, etc.
6. Amount and location of waste land on the farm and its availability for planting.

Too much consideration to the question of adaptability of soil and subsoil cannot well be given. Much of our prairie land that produces excellent agricultural crops probably will not produce a permanent growth of trees. Planting on such land except experimentally is a waste of time and energy. If an impenetrable substratum, whether of clay or rock, exists as close to the surface as two or three feet, it will probably be next to useless to plant on such ground.

Depth to permanent moisture is another very important point to consider. Where the ground water stands too near the surface successful planting is very difficult, and where the soil is dry to great depths tree growth is precluded.

The location of every forest plantation on a farm will largely be determined by the size, position and shape of the fields. The private and public roads will also have influence. No farm can be

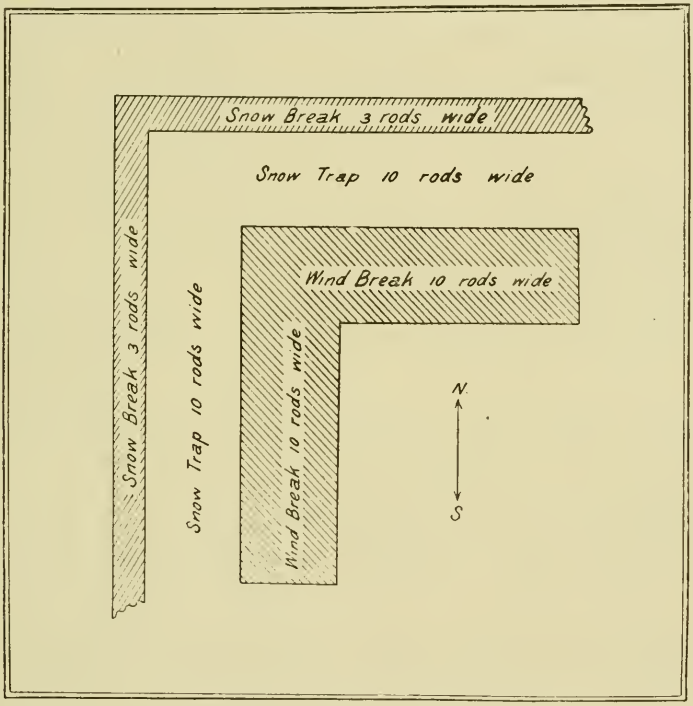
properly laid out without considerable thought having been devoted to the adjustment of the subdivisions of the same. Belts of planted trees can very conveniently be placed at the borders of the fields. In such positions they will serve the purpose of windbreaks and also not interfere with the convenient tillage of the land.

The position of the buildings on a farm should have very great weight in determining the location of the forest plantations. The usual tendency is to plant the trees too close to the buildings and thus to create conditions causing snowdrifts in winter to cover up the residence and barns and hinder the work on the farm. Provision for proper circulation of air in the summer should also be made. For this reason forest belts on a farmstead should enclose a liberal allowance of space around the buildings. The position of the buildings with reference to other parts of the farm and with reference to neighboring farms will also determine the position of the trees. For instance, if a natural timber belt on a neighboring farm affords protection from the north wind, the planter would hardly be justified in planting a belt on his own land for this purpose. He could distribute his planted trees in some other direction to greater advantage. The need of shelter and windbreaks is so urgent on the majority of prairie farms, particularly in the Red River Valley, that this subject cannot well be emphasized too much. It is difficult to estimate the amount of comfort that can be derived on a bleak prairie from a shelter belt of forest trees.

Every forest plantation on the unprotected prairies of Minnesota should have a secondary protection, consisting of a separate plantation. This secondary plantation has been named a snowbreak. The purpose of the snowbreak is to cause the snow to drift outside the boundaries of the main forest plantation or outside the farmstead. As is well known, the snow drifts on the lee side of the obstructions, causing the drift, rather than on the windward side. For instance, a belt of trees running east and west along the north side of a public road will cause the road to fill up with snowdrifts, providing the prevailing wind be from the north. If the forest plantation is in the form of a block, the snow will pile up in the whole block almost to a uniform depth, and during the long winter season it is not likely to melt off in such a situation; on the contrary, it will constantly accumulate, sometimes getting to be twenty-five or thirty feet in depth. When it begins to melt in the spring time it will settle down on the branches of the trees and crush them. Many an excellent grove in western Minnesota and the eastern Dakotas has been almost ruined in this manner by the drifting of snow. If the planta-

tion is a narrow belt the most of the snow will drift on the lee side of the belt outside of the boundaries containing the trees.

The snowbreak should consist of an L-shaped belt of trees one or two rods wide, planted about ten rods to the windward of the main forest plantation, that is, on the north and west sides in Minnesota. The main body of this belt may be planted with cheap species of trees, such as white willow, cottonwood, box elder, etc., whose breakage will not be any great damage to the plantation or much loss to the planter. The row on the extreme north and west should consist of a tall growing species, an evergreen such as pine



Plan for snowbreak on the prairie.

or spruce being preferable. The open space ten or twelve rods wide between the snowbreak and the main forest plantation will serve as a trap for the snow, into which the drifts will be piled.

The location of the forest plantation will also be determined by the amount, kind and position of any waste land that may happen to occur on the farm. It is always a good financial policy to utilize the waste corners of the farm for forestry purposes whenever possible.

Establishing a Forest Plantation.—Even after two or three decades of experience in tree planting in the prairie states the popu-

lar mind is still greatly clouded as to what is meant by a forest plantation and what methods should be used for its establishment. Many of our nurserymen whose customers are chiefly city people have developed the idea that tree planting means landscape gardening. Their catalogues abound in eulogies of imported species from all quarters of the globe. They advertise novelties as though such material had been tested and its merits proven. They place fancy prices upon their nursery stock and expect the tree planter to be able to purchase this material to be used in a forest plantation. A little figuring at this time would probably throw some light on the possibilities of farmers following their advice. A nurseryman who can sell transplanted Norway spruce trees two feet high for twenty-five cents apiece seems to think that he is offering goods at bed-rock prices and often cannot quite understand why every farmer tree planter in Minnesota does not give large orders for this kind of material. He forgets that a forest plantation to be of any value must have enough trees on it to shade the ground as nature does in her forestry operations. In order to secure a good cover of Norway spruce within ten or fifteen years at least 1,000 trees should be planted per acre, and 2,000 would be better. One thousand Norway spruce trees at twenty-five cents apiece would cost $250. No farmer who has good business sagacity is going to invest $250 per acre in the nursery stock of a prospective forest plantation. The average Norway spruce forests of Germany are not worth $250 per acre on the stump when the trees are one hundred years old. The proposition that a farmer should invest $250 an acre in the establishment of a forest plantation that must require one hundred years of growth before it is mature is so absurd and so unreasonable that it seems that no sane man would give such advice, and yet such advice is common. A capital of $250 put at three per cent compound interest would amount to $3,800 in one hundred years.

One of the greatest needs we have today for furthering the cause of forest tree planting is a class of nurserymen who comprehend the situation and who have enough ingenuity about them to grow evergreen seedlings by the million at less than one cent apiece. Present prices and present methods of nursery practice, particularly with conifers, are hindering the cause of tree planting more than all other influences combined. Our nurserymen must learn that a forest plantation is not a lawn or dooryard plantation, that for forestry purposes very small seedlings are much to be preferred to expensive transplanted trees, and that their present methods of practice can be improved and cheapened to a marvelous degree. Do not ignore the city customer who wants a half-dozen trees once a year

to plant on his bluegrass lawn and is willing to pay a good, round price for the operation of transplanting which such trees need preliminary to the endurance of hard and unnatural environmental conditions; but these people are not all the people in the world who want to plant trees. Minnesota farmers ought to plant millions of forest trees where the city people plant scores, and they will plant in the future by the millions if the growers will put the cost of this planting within their reach. If the present lack of consideration for the needs of farmer tree planters continues in Minnesota and the Dakotas for the next two decades, state nurseries will be established for the growing of coniferous forest seedlings at reasonable rates. If the nurserymen of the northwest are willing that this great opportunity for business should slip out of their hands and be absorbed by the state, the best way for them to bring this about is to continue the attitude of ignoring the forest planter.

Cost and Profits of Planting.—An acre of forest can be planted with 1,500 seedlings of the common deciduous species for $10.00 or even less, counting nursery stock and labor. Whenever the farmer can plant evergreens for the same price, coniferous plantations will be the rule in Minnesota. Instead of the farm plantation consisting of willow, soft maple and box elder, valuable, long-lived species will be used.

It seems that at this point it would be well to cite what can be accomplished in the production of planted coniferous forests on your western prairies. A planted grove of European larch near Clear Lake, S. D., a few miles across the Minnesota line, was measured in the fall of 1901. The plantation had just completed its sixteenth summer's growth, having been established in May, 1886, by the planting of seedlings shipped from England. At the present time the nursery stock from which these trees were grown would cost about $10.00 per thousand. No record of the prices that were paid at that time are available, as the owner kept none. The labor of planting was largely done by the plow, the ground having been furrowed out and the trees set in the furrows. It is safe to estimate that the total expense of establishing this plantation should not have been greater than $20.00 per acre. At the time that it was made the land which it occupies was worth about $10.00 per acre, so that the total investment can be reckoned at $30.00 per acre.

In 1901 this plantation had produced 1,054 first class and 1,139 second class fence posts per acre. Assigning the current value for fence posts prevailing at that time in that part of South Dakota, this grove was worth net $229.00 per acre. If compound interest be allowed at five per cent on the investment from the time of the estab-

lishment of the plantation to the time the grove was measured, and also ten cents per acre per annum for taxes at the same rate of interest, the grove has produced a net annual acreage value of $10.70 in profits. Such profits as these are far better than anything that can be had in wheat growing. No other grove of broad-leaf trees either in Minnesota or the Dakotas has produced such an enormous increment in value as this grove of European larch. When our nurserymen succeed in growing larch seedlings for $5.00 per thousand to a size ready for transplanting into the field, the probabilities are that every Minnesota prairie farm will have plantations of this valuable species.

Many of our tree growers advocate handling seedling trees very tenderly in the operations of transplanting. If the proper conditions of moisture are maintained around the roots of the trees during transit from the nursery to the field, or in shipment, rough usage will not often cause any great damage. In the states farther south osage orange hedges have been planted by simply opening a furrow, laying the plants down and covering the roots with the earth thrown from the next furrow. Tree planting, in order to be profitable, must be reduced to the same degree of perfection and simplicity that our farmers have brought into their production of agricultural crops. The tree planter who advises the farmer to put the roots of his little trees in the same position they occupied in the forest or seed bed, and to be careful to sift the loose, rich earth around the rootlets, and not to leave them until he has poured a bucketful of water around each plant, might just as well preach to the wind, because these precautions are absolutely impossible of execution, being prohibitive in cost.

A farmer in Richland County, N. D., had a block of ten acres of land that he wanted to plant to green ash seedlings. Instead of purchasing high priced seedlings that were four to five feet tall, with great large roots that would require a spade and shovel for their planting, he bought the smallest, cheapest seedlings he could find quoted on the market. He had a ten-year-old boy who was a very industrious little fellow and one good hired man to assist him. He and his hired man carried spades, and with the spade they would make an incision in the ground, moving the spade handle back and forth so as to make a little narrow slit in the soil. The boy was on hand with a bucketful of trees with their roots well moistened, and would hand out a tree to the planter when he was ready to slip the little seedling down alongside the spade into the narrow slit in the ground. The spade was then withdrawn, and as the planter advanced he tramped on the earth at the base of the tree and firmed

it about the roots of the plant. In this way the three workmen, two men and a boy, were able to plant several thousand trees in a day, and the whole expense of establishing that plantation did not exceed $3.00 per acre. He secured almost a perfect stand, and his trees are now several feet tall, growing thriftily, and no doubt in much better condition than larger trees would have been if he had used them. This is an illustration of the methods that must be employed in order to make forest planting a financial success.

The planting of coniferous forest trees in New England is being accomplished at present almost as cheaply as was the case with the green ash seedlings above mentioned. There seems to be little doubt but that white pine plantations can be established at $4.00 to $5.00 per acre. If the farmers of rock-ribbed New England can make forest plantations at $4.00 or $5.00 an acre, where all of the labor has to be done by man power, it seems that Minnesota farmers ought to be able to accomplish the same results where horse power can be used with such great facility. The difference in cost between Minnesota and New England plantations is largely due to the difference in cost of the nursery stock. New England farmers can usually obtain wild white pine seedlings from the neighboring woods at a very small cost. A Minnesota farmer usually plows his land preparatory to tree planting, and in the prairie regions this is absolutely essential to success while it is not necessary in the east, but the cost of plowing the land where gang plows are used ought not to exceed $.75 to $1 per acre. Another expenditure that Minnesota farmers will need to provide is cultivation after the trees have once been established. In the more humid eastern states forest trees are left to take care of themselves and are able to compete with any other weedy plants which might interfere with their growth. On the prairies of the west, cultivation to keep the grasses out of the grove is absolutely essential to success. This cultivation adds materially to the cost of the plantation.

The Minnesota farmer, however, has in store as a reward for his extra labor and expense the prospect of a market far superior to anything that can be hoped for in the near future in New England. The millions of fence posts that are used every year on the prairies of the west must be replaced in a few years by others. The demand for fence post timber is constantly increasing, and this can be grown in comparatively a very short time. The telegraph and telephone pole industry is also likely to prove very profitable in the future. European larch telegraph poles can be grown in twenty to twenty-five years. When we remember that such poles now are selling for $1.00 to $2.00 apiece on the prairies and understand that

from 250 to 500 poles may be grown per acre, we begin to see what the possibilities are for commercial plantations of this sort. On the whole, the prospect offers encouragement for Minnesota tree planters. The question of the supply of material with which to plant is bound to solve itself. It will perhaps be a number of years before farmers can buy the most desirable kinds of forest trees and can be sure that what they are buying is true to name, but the time is certainly coming when such conditions can be guaranteed to Minnesota planters.

MALINDA—AND HER NOBLE FAMILY.

A. W. SIAS, HARBOR VIEW, FLA.

(Inspired by the show of Perkins' Seedling Apples at Boston.)

Malinda—mother of a royal race,
At times hath a blush on her pretty face.
Vermont—the origin of this good fruit
That she drew sweets from maples who'll dispute?

Mr. Perkins—the godfather—may be
He's in hot pursuit of the prize apple tree!
He's on the right beat for a long keeper,
Knows the worm! and is not a late sleeper.

Malinda was born at Bethel, Vermont,
Named for Malinda Rollins—depend on't.
Was among the earliest pioneers:
At Elgin, Minnesota, a home she rears.

Here she met a crank—by name of Sias—
In horticulture, who posed as pious!
Way back in eighteen hundred fifty-nine,
He had a long string of rare fruits on his line.

But the Malinda was so sweet and good,
He caught her on hook—as such a crank would!
Malinda could not stand "forty below,"
So applied for divorce—as you must know.

Her children I hope will all cold withstand
And bring millions to Red Wing—right to hand!
Wyman Elliot—at Boston—it seems,
Showed a thing far better than "Boston baked beans."

All who visit the World's Fair, must go see
Malinda's most wonderful family!
Enquire for a man by the name of Latham,
You'll meet with due courtesy—he has 'em.

—Sam Bucus.

THE WORLD'S FAIR AT ST. LOUIS.

A. K. BUSH, DOVER.

(Mr. Bush was with the Minn. Fruit Exhibit, World's Fair, from June 15-30.)

Soon after I reached the grounds two old gentlemen were seen at a distance gesticulating with great earnestness, and, to all appearance, were relating to each other some of the interesting episodes that had occurred in their experience and came under their observation since leaving home, also describing in glowing terms the wonderful exhibit that has been gathered from the four corners of the globe and so artistically displayed on the World's Fair grounds. It so happened that I overheard a young man tell one of his friends that those old fellows had only traveled eight miles by rail during their lives until the exciting journey to St. Louis began. Those old mountaineers were living as fast as boys at a circus and without doubt will entertain their friends at home for weeks or months with recitals that will suggest "pipe dreams" rather than solid facts which they really saw with reliable eyes. At another time I heard a lady in the Art Gallery, who evidently was an artist and had traveled extensively at home and abroad, say to a friend, "one might easily imagine themselves amongst one of the choicest collections of paintings in the old world; I did not expect to see such choice and rare gems of art as I find in these buildings."

In my opinion no one who can afford the expense can afford to miss seeing the World's Fair, because the opportunity of seeing so many choice samples of the world's products bunched almost at our back doors may not, and probably will not, occur again during a lifetime. I shall not attempt to describe an exhibit that is so large and varied that I could hardly see over it in two weeks, but will confine myself to the Minnesota fruit and flower display in the Palace of Horticulture, where I made headquarters and myself useful during the third and fourth weeks in June. Sec. A. W. Latham, superintendent of the Minnesota display, and his worthy assistant, Thos. Redpath, deserve much credit for collecting and installing an exhibition so creditable to the "Bread and Butter State." It so happened that the writer was at the Minnesota booth during the strawberry season, when we showed more and better fruit of that kind than any other, or, in fact, all other states combined. We maintained in good show condition 100 to 150 quart plates—not samples—of fine, large strawberries during that time. This was

made possible because of the interested growers at home who kept them coming in the large refrigerator cases of 48 quarts on almost every train. Special credit is due Mr. Wyman Elliot of Minneapolis for his good judgment, hustle and push in getting out amongst the growers and selecting, packing, and starting the berries so that they reached their destination fit for the exhibition tables rather than the garbage can, which were receivers for many arrivals of small fruits as they came to the building from near-by states.

A lady from one of the Gulf States said to me one day while the strawberry display was at its best, "Those luscious looking berries must have been grown under glass if they came from Minnesota!" The very name of our state suggested blizzards rather than strawberries to her mind!

The Minnesota Fruit Exhibit will do much to overcome the prejudice that is still maintained in some portions of the South and East, where the papers have given much more space in advertising our blizzards than they have in calling attention to our possibilities as a fruit and vegetable growing section.

If seeing is believing we shall make converts of some of the old croakers at home and abroad before the World's Fair closes—cherries, currants, gooseberries, raspberries, blackberries, plums, grapes, etc., in their season are coming to fill the plates when strawberries disappear from the scene. When Wealthy apples are red and ripe we expect to give the World's Fair visitors at St. Louis a surprise and treat equal to that enjoyed by them at Buffalo, where they gave us credit of showing and freely dispensing the best apples on the grounds. However, the anticipated apple show will depend wholly on the Minnesota growers. If they are as generous and careful in selecting and packing their products as were the small fruit growers, we can capture the approval of all who visit the Palace of Horticulture during the months of October and November, when the attendence will be at high tide.

The fruit judges who scored our strawberries did not miss an opportunity of taking a box, when offered, for dinner, which we regarded quite suggestive. We advise all our readers to go to the World's Fair and see for themselves.

WHY FRUIT TREES FAIL.—*Country Life in America* points out that the dropping off of young fruit is not due to insect pests, as it is popularly supposed. More often it is because of the fact that many varieties of fruits are self-sterile and the blossoms require the contact of the pollen of other varieties before they will mature fruit. Not getting this pollen, many fruit trees do not bear at all or very much. The same trees treated by the new methods of grafting and planting will often bear large fruit and plenty of it.

HORTICULTURAL IMPROVEMENTS IN DULUTH.

MRS. IDA B. THOMPSON, DULUTH.

A truly beneficent state always protects beauty by its laws, because our inbred savage instincts are ever ready to mar or destroy early that which it desires to cherish late, and as it is only the few who discern in the rough what the many see in outline their task would be rendered hard without the protection and aid afforded by law. This is why I claim with great confidence your interest in Duluth. I have been disappointed that our society could not hold there its annual meeting and so aid the work for the "city beautiful." One thousand dangers beset the well favored thing or person everywhere. First, neglect is a great factor; a beautiful thing gets less care than is usually bestowed on that less favored. This was so with my "city beautiful for situation."

Duluth in its early years was neglected; then foreign tree peddlers, art lecturers with a financial love for their profession only stirred the busy hive of industry to things beyond the three streets of the original townsite. But they began the study of the beautiful in nature right by letting alone the most unique point of land in the union, six miles long, unrivaled in this "bread and butter" state, naming it the Minnesota Point. This island village has been an increasing joy year by year, and this season art has been joined to nature and within hearing of the lapping Mississippi grow flowers of every hue.

We cannot adequately set forth the many floral improvements in the city proper. Landscape gardening has begun in earnest; the work of the flower show for many years has been supplemented by various business enterprises with agents justly proud of their work, for they tell the people that which profits from their own experience, and orders follow, one firm having delivered over three thousand dollars' worth and eighty per cent of this was shade trees and twenty per cent fruits, with only two per cent of loss.

The last few years in Duluth has added materially to the chain of elevators, schools, churches and, best of all, parks, containing over 500 acres, all of which have been beautified, especially the parks,—lungs for future generations—six in number, any of which deserves a paper of this length to describe it.

Special impulse has been given to this work by our commercial club. The parks are appreciated more than ever, and the city has not grudged means for the enjoyment of our 75,000 in-

habitants. Then club workers have become more helpful, schools more practical; private citizens have worked with each other—the whole town was interested by a public competition with a money prize for each ward.

The year of 1903 has been the best of all for home stock planted; northern grown trees have supplanted the painted fruit blossoms of eastern fame. At a summer fair held in this county there was a creditable exhibit of the city apples and a tent of fruit grown in the state sent by the enterprise of a state nursery had crowds of visitors and did us much good. The sale of stock booked for spring is the largest on record; acres of land have been cleared and planted with trees; the Normal School addition has changed part of a forest into a park. The brick, morter, stone and timber improvements have wearied us by their monotony; the hardness from the distribution of much money has been so reflected upon our people that we ourselves have been in danger of losing the simple life that you and I love or we would not be here.

But a new era has dawned; our own planted trees are now big enough to shade us as we sit and think of the future when some portion of our twenty-five miles of water front will be adorned by a glittering stone building with a roof garden, where the public of this most western port may bathe their bodies and refresh themselves like the Romans of old.

Notes from an accompanying letter from H. Cleveland, of Duluth, under date of Oct. 21, 1903, are appended:

"In my journeying about Duluth I have found many isolated fruit trees in bearing, such as Duchess apples, maturing perfectly about Sept. 20; crab apples, of endless varieties and full bearers; Early Richmond and Morello cherries; and several kinds of plums that annually repeat their gifts generously; and currants, red, white and black, of many varieties; gooseberries the same, as well as raspberries of the three varieties, red, purple, black and a few Antwerps.

"There is no doubt of the capacity of soil and climate as to raising many varieties of apples, all of the varieties of small fruits. Several varieties of pears also will do well here. Quinces, plums and also several of the grapes, as I will demonstrate in a practical manner next bearing season. There are several large plantings of strawberries that will come into bearing in 1904.

"I find an enlightened interest manifested generally in the community for home culture of fruit, and a widespread desire for home improvements to grounds, etc."

Mrs. Ida B. Thompson: Our park commissioners have done a good work this year and have set apart some of the most beautiful parts of Duluth to be adorned. They have done good work and

are getting some good experience. They are beautifying many of the waste places about the city.

In regard to fruit I would say that we have done well with our apples, and our raspberries have done finely. I have been superintendent of the county fair for ten years and always had the apples more or less under my care. This year was a very poor year, although I had a good supply myself. I am sorry that Duluth does not show up well at the meetings of this state society. That is why I long for the time to come when you can hold a meeting in our city. I cannot tell you what we lose in the way of trees and shrubs, I have no business to do so. We brag about what we have, but we do not talk about our losses. (Laughter.) One thing that handicaps us is the lack of public interest. We want to "ding" it into our people all the time that they must plant trees and shrubs, and we want to enthuse the young people to take up this matter. We have a city that has more beauty to the square inch than any city in the Union for its position on the map. I heard some one talk about being three hundred feet above the river. Why, bless you, some of us are six hundred feet above the lake.

Now I would like to say a word about my own fruit. I had the best crop of black currants this year that I ever had. I had four bushels, and I sold them all at fifteen cents a quart, and I did not put them in boxes either, but I sold them by good fat milk measure. (Laughter.) They were all large, and I had the good fortune to take the first prize at the county fair. This year our people took it into their heads to have a summer fair, and it came at just a time when I could take this prize. I have some very good apples, and I think if we imbibe the spririt of this society we shall soon be able to report better things from the northern part of the state.

THE AMERICAN POMOLOGICAL SOCIETY, through Sec. John Craig, of Ithaca, N. Y., announces that the report of the proceedings of the recent Boston convention is ready for distribution. This report contains an unusually large amount of valuable matter, including as it does the addresses of noted scientists and pomologists. Important changes appear in the amended code of nomenclature. Members of the society pay a biennial fee of $2, either to the treasurer, L. R. Taft, Agricultural College, Mich., or to Sec. Craig.

Last fall we had a fine young plant of salvia in the flower garden, and as it was just coming into bloom about the time we were expecting frost it seemed a pity to let it freeze, so we took it up and put it among the plants in our window garden. It was never out of bloom from that day until late in the the spring. It bids fair to be one of our best blooming plants. The bright scarlet bloom is very showy, and as it is an upright grower, and has a limited amount of foliage, it requires but little room.

ASPARAGUS FOR THE HOME GARDEN.

E. F. PABODY, MINNEAPOLIS.

For seventeen years I have had a summer home on the south shore of Lake Minnetonka, in what is regarded as the most favorable horticultural location in the Northwest. The selection of this site was made upon the advice of that eminent horticulturist and pomologist, the late Peter M. Gideon. In this delightful place I and all the members of my family have found pleasure, profit and health in cultivating flowers, fruits and vegetables.

To mar sometimes the pleasures, bitter disappointments have been experienced during these years. For instance, a vineyard of 3,000 vines of the very hardiest varieties of grapes, principally Concord and Delaware, has proven to me that a commercial vineyard will never pay in Minnesota. And yet finer grapes do not grow anywhere. Forty or fifty vines, near my cottage, yielded an abundant supply of this very delicious fruit, and they are very highly prized. Early Richmond cherry trees grew to a large size, were vigorous and healthy, and gave promise of an abundance of fruit, but at the first blush of red upon the fruit the wax-wings, or cherry birds, as they are called, appeared in countless numbers until in desperation the axe was laid at the root of every tree.

On the other hand, the earth never produced finer strawberries, quantity, quality and beauty of coloring considered, than have delighted our eyes and gratified our tastes. Raspberries, currants and gooseberries have been grown that were unsurpassed anywhere. Duchess and Wealthy apples with such colorings as no artist could copy, and a flavor which only Minnesota could produce, have in their season been a constant delight.

Coming thus in contact with nature makes life worth living and adds vastly to its zest and enjoyment.

If the question were asked what part of the garden or orchard had yielded the largest returns considering the expenditure of time and money, I would say, without hesitancy, the small space given to the asparagus bed. Seventeen years ago 100 roots, two years old, were purchased at a cost of seventy-five cents. That is the entire money expenditure. The work is scarcely anything. Caring for the bed we only consider as exercise or recreation. Less than one day's work each year has been all that was necessary to keep the bed in good condition. Seemingly it is as good today as it was the second year after planting. It has yielded largely every single year, and it bids fair to give good returns for one or two more decades. Heat or cold, moisture or drought, have seemed to have very little effect upon its vigorous, rapid growth.

Asparagus is one of our very earliest vegetables, as it is ready for the table the latter part of April or the first of May. Not many persons know what a delicacy, what a luxury, asparagus is. Perhaps you have bought some spindling stalks that had been in a grocery store for several days, perhaps the maid in the kitchen did not know how to cook them properly, perhaps she dressed them with skim milk instead of cream. If so, you haven't a very exalted opinion of asparagus. But if you go into your own garden and cut the large, thick stalks of very recent growth, perhaps only a few hours out of the ground, have them properly cooked and dressed with rich cream, you will have one of the finest delicacies produced in the garden. Asparagus is suited to a delicate invalid, and it is highly relished by the working man and furnishes him nutritious food.

Many persons have been deterred from growing asparagus because of the methods of planting and cultivating in vogue a few years ago. Once it was customary to dig trenches two and a half feet deep for planting. In the bottom of these trenches was placed one foot of manure, and the trench was gradually filled as the crowns pressed upwards. As the full-grown stalks were delicate and easily swayed by the wind, a stout stake was driven down by each one, to which it was made fast.

All this has been changed and now no vegetable is more easily planted and cultivated than asparagus. A rich, sandy soil is best suited to its needs. It should be plowed or spaded as deep as possible and well manured. The rapid growth of the large, succulent stalks makes great demands upon all the life-giving principles of the soil, and this demand should be supplied. For the home garden no attempt should be made to start from the seed. Two years are lost in that way. Buy two-year-old roots from a reliable nurseryman. They will cost you only about seventy-five cents a hundred. One hundred plants are enough for an ordinary family to begin with. You may soon want more, for as you learn its value you will not be satisfied with a small amount. For a long time we were limited to one hundred, but two years ago we planted two hundred more.

As to varieties, Connover's Colossal or Barr's Mammoth are very satisfactory. We have a bed of each. Early spring is the time to plant, as soon as the frost is out of the ground. For one or two hundred plants, rows two and a half feet apart and plants one and a half feet in the row has seemed to me about right. Plant in trenches or holes six inches deep. Do not fill the holes at once. Place the crown below the surface and gradually fill as the plant grows.

The shoots should not be cut at all the first year and very sparingly the second. Two years from the time of planting you will have an abundance of this very delicious vegetable, if you have taken the right course in planting and cultivating. With a knife suited for the purpose the shoots should be cut two or three inches below the surface. On some bright, warm days two cuttings can be made in a single day.

The asparagus season is from about the first of May to the middle of June. At the latter date all stalks should be cut below the surface. The ground should be well worked three or four inches deep, and a liberal coating of manure applied. Keep free from weeds and allow the plants to grow until after the first killing frost. Then mow and remove from the bed that the seed may not find lodgment and sprout.

If you are interested in this subject and desire further information, consult Prof. Green's "Vegetable Gardening," a book which ought to be in the hands of every member of this society. His article on asparagus is very complete

The U. S. Department of Agriculture is making an effort to awaken a greater interest in the growing of asparagus. If you will send a postal card to Hon. James Wilson, Secretary of Agriculture, you will receive, without cost, by return mail, Farmer's Bulletin No. 61, on asparagus culture.

In closing this paper a few sentences from this bulletin will have far greater weight than anything I might present to you. The writer says: "The popularity which asparagus has achieved during recent years is remarkable. Formerly a luxury upon the tables of the rich, it is now, during the season, a vegetable seen daily upon the tables of people of moderate or even small incomes. It is also frequently recommended as an article of diet for the sick and convalescent. The fact that asparagus appears in the market at a time of year in which few or no other vegetables are available has had much to do with its increased consumption in our cities.

"It can be easily preserved by canning or drying, the product in this form being almost equal to the fresh article; and this has increased its use, being, as it were, a lengthening of the season. Field culture, too, is one of the most interesting innovations of the present age and one which has been attended with the most striking success.

"Within the last few years the cultivation of asparagus has been greatly extended, yet the demand is still greater than the supply, an indication that there is room for an extension of beds by those already in the business and for the establishment of beds by those who have as yet given no attention to this branch of gardening. Every kitchen garden should have its bed from which the table may

be supplied with this most delightful and wholesome vegetable. It is hardly to be doubted that a diffusion of knowledge concerning the later and improved methods of culture, with their reduced cost and lightened work, would do much to increase the popularity of this vegetable and bring about its cultivation in gardens where it has never found a place, but where its introduction would add greatly to the present diet of the family."

The President: I would like to ask Mr. Pabody whether he was able to discover any difference between Barr's Mammoth and Palmetto?

Mr. Pabody: I can hardly tell the difference when they come on the table.

Mr. Elliot: Is there any difference in growth, or in the amount of stalks you get from a bed?

Mr. Pabody: I have not been able to see any difference. The Barr's Mammoth was planted in richer soil. Really I do not think I could see any difference.

Mr. Taylor: Did you ever cover your bed with manure in the fall of the year?

Mr. Pabody: No, sir, only in June when I cultivate. I never put it on in the fall. It is said covering in the fall is really an injury.

Mr. Baldwin: Have you ever had any experience with rot and blight? It weakens our beds. So far we have not found a remedy.

Mr. Pabody: No, sir, we have never been troubled with blight or lost a crop from any cause.

Mr. Baldwin: I find it is very extensive throughout the state, and our beds are very badly affected.

Rev. C. S. Harrison (Neb.): This rust or blight we get all over the country. It struck the sand hills in Nebraska. From my observation I really think it is starvation. I notice that very highly fertilized beds escape, whereas on poor ground they are almost entirely killed; so I judge that has something to do with it. There are some kinds that are immune. The White Columbia does not rust at all. I was at Boston at the horticultural meeting, and I saw some there as large as a hoe handle. I asked the man how he grew it, and he said he dug his ground deep and put on all the strong manure he could put on. I got a quarter of an acre of ground, and I put on eight loads of strong manure, and I got it as big as a hoe handle, and I believe I can get it as big as a fork handle. People do not understand what it is. A gray head came along one day and asked me, "Do you folks ever eat that stuff?" I said, "O, yes, do you eat green peas?" He said, "Yes." "Well," I said, "it is just like green peas, only more so, and it comes earlier in the spring." Those who grow asparagus know that it is a rank feeder. If the rust threatens to wipe you out get this Palmetto and White Columbia, which will not rust, put it in a well fertilized bed, and you will not be troubled with rust.

Mr. Baldwin: Is not the Columbia a very poor yielder?

Mr. Harrison: Well, it is not so large, but it yields fairly well.

Mr. R. H. Pendergast: I am rather an enthusiast in asparagus, and with the rich culture I give it I have never been troubled with rust. I have always followed the rule of using a great deal of fertilizer. I use ashes and salt and have always had asparagus. The gentleman said he did not practice mulching in the fall. I make it a rule to fill up my bed with stable manure at least a foot deep in the fall. It decays and settles down, and the plants come right up through it, and then I use a long knife to cut the asparagus.

Mrs. Ida B. Thompson: At what season do you use salt?

Mr. Pendergast: I usually use it in the spring, but you can use it in the fall. I am a strong enthusiast in the use of all the ashes I can get. I use it on my small fruits.

Mr. Harrison: I think the application of salt is of rather doubtful utility. Asparagus will stand more salt than any other vegetable, perhaps for that reason it gets a good deal. Put salt on one row and not on another, and I am under the impression you will not find much difference.

Mr. Pabody: I find a serious objection to the use of salt in that it forms a crust over the ground and plants find trouble in forcing their way through.

Mr. Elliot: There are some points brought out in this paper that are different from the old teaching. We have always practiced putting on our manure in the fall, but he has advanced the idea that we ought to put it on after the close of cutting, cutting off all the present year's growth and then putting on the manure to fertilize the plants. I can see that this is a good thing, in that it helps to invigorate the plants and helps the crop in the following year, whereas we put the manure on in the fall, and we do not get the benefit of it early in the spring, when we ought to have it, as if put on earlier in the season.

Mr. Beardsley: We practice field culture of asparagus. We have our rows four feet apart in the field. We cut off all the foliage in the fall. We go between the rows with a plow and turn a dead furrow right on the ridge. During the winter we haul that furrow full of manure, and in the spring we drag it down level. We have got that manure covered up and it will feed the roots all the year.

Mr. Bailey: I would like to ask the gentleman if cutting off the plants in the fall is not a bad practice, for the reason that there is nothing there to hold the snow. We grow asparagus in a commercial way. I leave the plants standing all winter and manure the ground, and in the spring I run the disc harrow over it, weighting it down, and it cuts up all the foliage and helps to bring humus into the soil again, and I think the plants are not so liable to rust if they are well protected.

Mr. Pabody: Do you not find that the sprouting of the seeds gives you trouble?

Mr. Bailey: Yes, the seeds sprout, but we cultivate our rows right out and that destroys the sprouts and gives us no trouble.

HORTICULTURE ABOUT HINCKLEY, MINN.

A. K. BUSH, LECTURER WITH FARMERS' INSTITUTE.

(Extract from letter dated June 9, 1904.)

This circuit of institutes is strictly in the best interests of potato growers, and nothing but topics bearing on that subject are discussed regularly on the platform. However, I meet those who are interested in fruit growing one-half hour before the advertised time of opening, and answer the flood of questions that come from the audience relating to the garden and orchard. We give notice of these fruit growers' meetings at the close of the morning session, and, as a result, usually find the hall pretty well filled at one o'clock with people waiting for instruction in the art. Strawberries do splendidly on the heavy clay lands in the vicinity of this place, Hinckley; however, they are successfully grown all along the line of the N. P. and G. N. Rys., from the Twin Cities to Duluth. Some farmers are giving their attention to the growing of vegetables for the city markets, which are quickly and cheaply reached. We visited a Mr. Struble, at Mora, who has a very large winter storage building, so constructed that it is heat and frost proof, where onions and cabbage are held for the late trade. It pays to prepare for this business when cabbage sells for $75.00 per ton and onions $1.50 per bushel, as they did last winter, and were a drug on the market early in the fall. We learned of one man who, last winter, sold $3,000.00 worth of cabbage grown on a small field. Mr. Westman, of Sandstone, told us he could not meet the demand that came for his strawberries, which sold for $2.00 per case of 16 quarts. He has several acres growing and is clearing land for a much larger acreage. We visited his farm and was surprised to see so little of the winter-killing which prevailed over a large portion of the Northwest. We also met Mr. Nyberg at Sandstone, who now has charge of the farm that the late Prof. Otto Lugger opened in the woods years ago. He told me they had several bushels of apples last year grown on the trees that the professor planted. Others reported, on various occasions, promising yields of small fruits and apples. In my opinion the time will soon come when this section will be sending strawberries to the southern and eastern markets; as well as supplying the home trade. The tame grasses grow wild in the woods. Clover abounds everywhere. The new comer soon learns that the pine stumps are removed at large expense, hence confines his clearings to the growing of vegetables, fruits and similar products.

Secretary's Corner.

THE MINNESOTA ROSE SOCIETY.—A society under the above title has been organized at Excelsior, the purpose of which is to consider not only roses, as indicated in the title, but also hardy shrubs, garden flowers and other ornamentals. Mrs. H. B. Tillotson is president and Mr. J. R. Brown secretary.

MEMBERSHIP OF HORTICULTURAL SOCIETY.—The Membership of this society is certainly growing and at this time including life members has re ached the total of 1,762 members. It looks as though we were to make the 1,800 mark this year.

PREMIUM ON PECK OF WEALTHY AT THE STATE FAIR.—Through a typographical error the premium offered on peck of Wealthy apples at the coming state fair reads $2 00. Please change this to $20.00, which is the amount of the premium. See page 77, state fair premium list.

MINNESOTA STATE FAIR.—Don't forget the state fair opens this year on August 29th, and make your entries, etc., accordingly. Don't leave your entries to be made on arrival but attend to it immediately. If you have not received the premium list, Sec'y E. W. Randall will send one by addressing him at Hamline.

FRUITS IN THE RED RIVER VALLEY —Mr. R. M. Probstfield, of Moorhead, writes in regard to this year's fruitage in the Red River Valley, "Apple trees of all kinds are loaded with fruit, raspberry crop immense, currents and gooseberries good crop. Strawberries beds that wintered had also a good crop this year. No blight on apple trees."

INFLUENCE OF TOP-WORKING ON BEARING.—J. S. Trigg, of Rock, Iowa, says, "We note a marked difference in the bearing age of some Fameuse apple trees top-worked on Hibernal stock and some top-worked on the Briar Sweet crab, the latter bearing heavily in six years while the former have not yet produced an apple." What is the experience of our readers along this line, as to the Hibernal being a late bearer when top-worked?

COLD STORAGE FOR THE STATE FAIR FRUITS.—The usual arrangement for storing early ripening fruits for the state fair and for the winter meeting of the society has been made with A. Booth & Co , of Minneapolis. By using these cold storage facilities the season of many of these fruits can be lengthened, but special care will have to be taken in handling and packing fruit intended for cold storage as bruises bring about early decay. Plums and early ripening apples should be saved in this way in order to make a full exhibit of what is grown on the place.

"VEGETABLE GARDENING" AT POPULAR PRICES.—The Webb Publishing Co., of St. Paul, who are publishing Prof. Green's book on "Vegetable Gardening" have issued a new list placing the price of this valuable work at $1.00 bound in cloth, and $,50 bound in paper, and hereafter the paper bound volume will be offered for securing a new member; the cloth bound volume,

as heretofore, one copy for securing two new members. This work should be in the hands of every grower of vegetables in the northwest and found in the library next to "Amateur Fruit Grower."

DULUTH STRAWBERRIES AT THE WORLD'S FAIR.—The largest and finest strawberries that have gone to the World's Fair from this state have been sent by two parties from the Duluth region, Mr. F. B. McLeran, of Wrenshall, having sent three refrigerator cases of exceptionally fine berries and Mr. A. McComber, of Duluth, one case of seedling strawberries. Mr. Wyman Elliot was at Duluth and packed this latter case himself. There were many berries in this lot leasuring six inches in circumference, and the judges at the World's graded them 98% out of a possible 100.

WEALTHYS OF THE 1903 CROP AT THE STATE FAIR.—A box of Wealthys holding a bushel, has been reserved out of the fruit that was stored last fall for exhibition at the World's Fair during the summer months, and will be exhibited at the coming state fair that it may be seen what manner of success attends this way of keeping fruit. The experience connected with the storage of this lot of fruit indicates that when properly handled, packed and stored at the right temperature, Wealthys can be kept in good condition throughout the year and retain very fully the natural flavor. A very full line of experiments should be conducted in the keeping of this fruit, which if successful will add immensely to its value.

APPLES FOR THE WORLD'S FAIR.—A large quantity of apples will be needed for the fall exhibit at the World's Fair, and an opportunity will be given to each member of the society to contribute to the apple exhibit. Many of our members have already communicated with the secretary tendering apples and other fruits for this purpose. The earliest apples are specially desired, but of course shipments will have to be made at all times during the fall months to keep up the display. If you have not already done so, please communicate with the secretary in regard to your contribution to this display. In some way contributors to this exhibit will be remembered in connection with it, either by recognition from the World's Fair or from the society. In writing please state what variety can be furnished and in what quantities. A box of a single bushel is a very satisfactory form in which to ship.

LATE WORDS FROM THE WORLD'S FAIR.—A letter received July 24th from President Wedge, who is with the Minnesota Exhibit at the World's Fair at this time, says, "We have on exhibition today 213 glass jars, 140 plates of apples, 85 plates of raspberries, 51 plates of currants, 15 plates of strawberries, 16 plates of blueberries. The small fruits, especially the strawberries and raspberries, attract much attention, and all small fruit is excellent." "You know the fine Washington exhibit opposite us: I have taken a great deal of pains to notice which attracted most people going down the aisles and can say positively that more by far look our way, and even if they are starting to go by on the other side the sight of the fruit in the glass cases almost always attracts them across the way. As I begun this sentence a group of five did just this thing."

SOME INJURIOUS INSECTS IN SO. MINNESOTA.—Prof. F. L. Washburn, State Entomologist, who July 16th returned from the annual inspec-

tion trip of nurseries in Southern Minnesota, speaks of some things he noticed as follows:

"The nurseries look in particularly fine condition, except that the destructive leaf hopper has begun seriously injurious work in one or two. We are fighting the same now with special apparatus in two of the larger nurseries.

"I found the maple trees in the streets of Luverne loaded with the Maple Scale, which we have to some extent in Minneapolis, and which is also complained of as appearing very suddenly in South Dakota at Sioux Falls. I do not think that the trees will necessarily be injured by this pest, because parasites are quite likely to appear to reduce its numbers materially, as well as climatic conditions. Pruning the trees and burning the cuttings at this time would be a decided help."

Small Fruits at the World's Fair in June and July.—The exhibit of small fruits at the Minnesota exhibit, World's Fair, commencing in the middle of June, has been well sustained up to the time of this writing, July 23d, and without doubt will be until the season is over. During the last two weeks of June, strawberries were the only small fruit sent there, and an exhibit approximating 150 plates of this fruit was kept upon the shelves. Reports from the World's Fair received under date of July 20th speak of 257 plates of small fruits being on exhibition, besides approximately 140 plates of apples. The small fruit exhibit has included in its season nearly every variety of fruit in the line generally cultivated, and the list of contributors is large. In another place in this number will be found a report from Mr. A. K. Bush as to the strawberry exhibit, he being at the World's Fair at that season. There being no assistant at the fruit exhibit during the first half of July no formal report has been made of that period. Mr. Clarence Wedge is with the exhibit at this time and will be until August first, and we hope to hear from him in regard to the Minnesota fruit show at St. Louis in the next issue of our monthly.

The Honor Roll for 1904.—The list of those sending in new members from the beginning of the year to June 1st is as follows:

J. M. Oliver, 1; T. Redpath, 4; T. E. Cashman, 31; F. M. Crosby, 3. W. H. Noyes, 2; R. Naumann, 1; A. Brackett, 7; Oliber Gibbs, 1; F. Yahnke; 223 (Farmers' Institute); R. H. Pendergast, 1; W. L. Taylor, 2; G. A. Anderson, 1; S. D. Richardson, 1; A. Norby, 1; W. L. Parker, 1; Frank Brown, 3; John Alf. Peterson, 1; C. C. Hunter, 2; Le Roy Cady, 3; P. Clausen, 1; G. J. Kellogg, 1; G. W. Strand, 14; Ole S. Quammen, 1; F. X. Ferodowill, 1; Jacob Schwab, 1; Prof. S. G Green, 1; W. F. Naylor, 1; E. W. Mayman, 1; A. E. Johnson, 2; E. A. Webb, 1; L. Johannessohn, 8; B. E. St. John-1; J. Swedberg, 1; R. S. Brickey, 1; I. A. Barberg, 5; Hans Nelson, 1; F. E. Schotzko, 1; Jewell Nursery Co., 3; J. A. Campion, 1; Peter Peterson, 1; Geo. C. Moore, 3; Jens Krog, 1; A. K. Bush, 4; John Bisbee, 54; S. Sorenson, 2; S. Sorenson, 2; I. B. Jorgerson, 4; J. V. Wichler, 12; Prof. Wm. Robertson, 3; W. H. Eddy. 2; F. H. Amtsbauer, 1; E. P. Jensen, 1; Denery Tousignant, 1; A. J. Philips, 8; A. L. Breuig, 1; Iver S. Klagsvik, 1; Henry Ginder, 1; Ole Skinnemoen, 2; C. R. Snyder, 3; C. Van Vliet, 1; Aug. Logering, 3; W. J. Tingley, 2; Wm. Thomssen, 1; E. M. Ericson, 1; A. H. Reid, 1; M. A. Hemstad, 4; Thos. C. Jones, 5; C. E. Older, 1; N. M. Thygeson, 1; Geo. H. Hamilton, 1; Nils Flaten, 3; F. F. Farrar, 1; Dr. E. M. Lundholm, 3; Rev. O. A. Th. Solem, 4; H H. S. Rowell, 3; Henry Dunsmoor, 1; John W. Brogard, 1; Otto Kankel, 8; J. A. Saxon, 1; G. Kuhnan, 1; John W. Erickson, 2; H. L. Simmons, 1; J. P. Ness, 2; Dr. R. Patterson, 1; H. Cleveland, 1; K. W. Lewis, 1; Franklin Benner, 1; F. M. Crosby, 1; G. Holty, 1; C. A. Grover, 3; David Secor, 1; O. F. Meyer, 1; R. E. Wright, 1; Chas. Fitzer, 1; C. D. Brackelsburg, 1; Peter Lindstrom, 1; Anton Jensen, 1; B. P. Christensen, 1; C. O Peterson, 1; H. L. Morgan, 1; Wm. Pfaender, 1; W. B. Gerth. 1; A. G. Long, 1; Frank Moeser, 1; C. A. Mattson, 7; Cornelius Kelly, 1; O Hoglund, 1.

Further accessions will be reported later.

RESIDENCE OF MR. A. W. MASSEE, ALBERT LEA.

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PERENNIAL FLOWERS.

MRS. A. W. MASSEE, ALBERT LEA,

(So. Minn. Hort. Society.)

Of perennial plants proper we have a list that will give bloom the entire season. A very modest, pretty plant, blooming very early in spring, is Arabis Alpina. It is a low-growing plant, completely covered with sprays of dainty, white, fragrant flowers. A bed of it in bloom looks like a snowbank. It blooms at the same time as the gay early tulips, and planted in a bed in close proximity to the tulip beds sets the latter off extremely well. It is very hardy, well liked by bees and blooms the second year from seed.

Mertensia Virginica, commonly called Blue Bells, blooming in May, to my mind are really beautiful planted in any vacant space. They take care of themselves and multiply quite rapidly. We have Dicentra (Bleeding Heart), which, if grown well, is quite ornamental for some time; and peonies, in variety, which every one knows, loves and can grow. The first of the peonies to bloom is Tenuifolia, quite distinct from any other variety in the foliage, which is fern-like. It has quantities of very bright, deep red, fragrant flowers. There is both a double and single form of this peony. Next to Tenuifolia in time of blooming is Officinalis Rosea Rubra, the old-fashioned, deep red peony, and it is still one of the best, although less vigorous than some of the newer varieties. Most of the newer varieties are later bloomers, having very large, double flowers, most of them fragrant, in shades of pink, red, cream and pure white; some with light lemon or straw centers. All are beautiful, and it is hard to say which is the favorite. I think I would have as many varieties as I could well accommodate. By planting the different varieties the blooming period can be extended over a period of several weeks. Peonies should not be disturbed unless the clumps become too large and encroach on something else. They like a deep, moist, rich soil, but resent water standing around them. They should have a very

liberal dressing of manure each fall, to be worked into the soil the following spring, in order to insure large, perfect flowers in abundance.

The old-finished, fringed, fragrant Garden Pink, blooming in June, are one of my *must-haves*. There is a white variety, very large and fragrant, but to my mind not so pretty as the pink variety. Both have the bad habit of bursting the calyx when fully open. One of the most enjoyable things I had last year was a bed of Picotee Pinks, or hardy Carnations. I purchased a packet of seeds for ten cents, planted them in a box outdoors two years ago this coming May, and raised about thirty plants. When they were about three inches in height I trasplanted them into a well prepared bed of quite light soil. The cutworms probably took one-third of the plants; the others grew finely, and by winter were fine, stocky plants. I did not cover them, as I have found that Garden Pinks resent covering. I have lost many roots by the leaves drifting on to them. The rabbits immediately pre-empted that bed for pasture, and in the spring it was a sorry spectacle for a flower crank. To put it mildly, I was vexed and declared a war of extermination against the rabbits. I had planted that bed for a purpose, not for the rabbits. It was a little experiment to test their hardiness here, which I rather doubted. Every plant was well trimmed, some to the ground; the latter never came to anything; the others I carefully took up and reset so as to fill the whole space, and soon they just fairly jumped, and stooled out so thickly that when they budded I thought I had never seen anything so full. Perhaps the rabbits did the correct think in pruning them. When they bloomed I felt the experiment was a success far beyond my expectations, and that is saying much. All the plants gave double flowers excepting two, and these were pretty; some of them were nearly as large, and all but the two fully as double, and all as fragrant as the florists' Carnation. The colors ranged from pure white through shades of pink to the darkest red I ever saw in Carnations. Some were white, edged with pink, others white or pink penciled in darker shades, while one very dark red looked as though it had been powdered with gold dust. I assure you I would not have undertaken to have counted the flowers on that bed. They did not burst the calyx, but of course the stems were short so you could not pick them without sacrificing the buds. I had so many I picked them buds and all, and never enjoyed any flowers as much, and I am sure the neighbors did also. They were at their full bloom in July and into August, but there was never a time after they commenced blooming that I could not pick a nice bouquet until November. I am very anxious about how that bed will come through this winter. If

the plants are dead or very feeble, I shall start again from seed. It would pay any one to sow a packet each year and so keep up their stock if need be.

The Funkias, or Day Lilies, are very handsome perennials. Funkia Subcordata, having large, white, fragrant flowers, in large sprays, is the best. Any one, even with a small place, can have a clump of this variety. It can be planted in a sheltered, shady corner by the house. It likes moisture. There is a variegated variety the foliage of which is very ornamental but the flowers insignificant.

The Hemerocallis, or Lemon Lily, is the choicest, most useful, easiest grown perennial of ironclad hardiness I know. I believe it will grow anywhere and under the most adverse conditions. I judge so from the action of my own plants. I set a small plant in the poorest soil and the most exposed position on our place, and it is now a large clump, and in June sends up many flowering stalks, each one bearing several large, lily-like blossoms of a pleasing lemon color and very fragrant. They bloom for some time, and the flowers make beautiful large bouquets. It is an old plant but is rarely seen in cultivation at the present time.

If your grounds are large you may have Delphiniums (Perennial Larkspur). There are several varieties, white and shades of blue. They are tall, rank growers, profuse and handsome bloomers, and if planted in variety will give bloom from May until late in the fall. They are fine for borders, as a background for other lower growing plants or among the shrubbery, the blue varieties being especially effective in the last named place. They like sunshine. They are not so suitable for small places.

Much is said about Rudbeckia (Golden Glow). I can't say I am very much in love with it as a plant, but I like the blossoms for cutting. Cut large bunches with long stems, add a little green that is suitable, drop them carelessly into a tall or large vase, let them arrange themselves, and they are a close second to the yellow Chrysanthemum. It is not suitable to small places, and even on large ones one clump (and you will have to yearly curtail that) is enough. Put it in the background where it can peep over some lower growing shrub. To give large and perfect flowers—otherwise it is no better than a weed—it must be liberally fertilized, as it is a gross feeder.

The Perennial Phlox is well worthy a place anywhere. They have been so much improved, and new varieties added, that one who had not seen any other than the old loose panicled white and lavender pink would hardly recognize these new and improved Phlox as belonging to the same family. When in bloom, gorgeous is the word that truly describes them. They have very large and close

heads of bloom and are of the most vivid colors. If planted in masses, they make your eyes ache, and perhaps set your teeth on edge if they have not been properly planted as regards shades. In planting in masses always put in a plenty of the white varieties and save your nerves. Perennial Phlox seems to be the only flower whose colors will not harmonize when planted in masses, but with plenty of white interspersed that unpleasantness is avoided. White Phlox is especially pretty for cut flowers. I know of nothing so pretty for large bouquets in summer as white Phlox and Fern fronds. They look so cool and choice, not common at all, and the Phlox is fragrant. Phlox are nice for the border, each variety separated by some other perennial plant or shrub, or among shrubbery, where it lights up the somber greens and adds much to the appearance of the grounds after the blooming season is over for most of the shrubs. The dwarf, early flowering Phlox commences to bloom in June and with me rarely has more than one blooming period. The tall, late blooming commence to bloom in July and bloom more or less until hard frost. You cannot make a mistake in planting these new varieties, and you will realize on your investment the first year and every year thereafter. So try them if you have not already done so.

If you have a shady corner somewhere don't fail to plant some native ferns and a few wild flowers from the woods. Hepatica Triloba, Bloodroot, Dicentra, Adder Tongue, the wild Wood Phlox and others. I have some Hepatica Tribola planted along the north side of the house, which I prize more than anything I have. They come so early, are so dainty, so free in bloom that I can pick all I wish for bouquets and still have more. The foliage also is ornamental the entire season.

If I have exhausted your patience, which I must have, I have not by any means exhausted the list of perennials that any one can grow and with much less care than you must bestow on annuals or bedding plants, and you need never be without blossoms from early spring until late autumn. In this class belong the Lily and Iris, some varieties of each being especially beautiful, notably so the Japan Lilies and the Japan Iris in great variety. In fact, we must thank Japan for many of our most beautiful flowers and shrubs. The choicest varieties in both of these classes are just a little difficult and need specially prepared beds, definite treatment and conditions that are not always obtainable and for that reason every one cannot succeed with them.

In conclusion, I want to speak of one vine with which I have been more than pleased, and I wish I could induce each one of you to plant one at least this coming spring. It is Clematis Paniculata.

It is a vigorous, healthy grower, nice foliage, which keeps green until the ground freezes, and in September and October is literally smothered with dainty, white, star-shaped, fragrant flowers, growing in sprays. There will be hundreds of these sprays so that the vine is one sheet of white, just a green leaf peeping through now and then. It does not seem to be fussy in the least, and I should say from my own experience it would grow anywhere excepting perhaps in the shade. I prefer it to the Large Flowered Clematis, and it is certainly much easier managed and less liable to disease. One plant will grow to cover quite a large space in one year. It must have something to support it; wire netting is what I use. It is just the thing for a porch. Try it.

HOW I GROW GRAPES.

J. W. MURRAY, EXCELSIOR.

"Good evening, neighbor. I just dropped in this evening to have a little talk with you about growing grapes. I know you have had some experience. I want to plant out a small number of vines entirely, or mainly, for my own family use. I want to plant such as are best adapted to that purpose, and I shall not begrudge them a little extra ground, labor or expense to secure success."

"Well, neighbor, if you proposed to grow grapes by the acre, for commercial purposes, I should want you to consult some one else, who is more experienced and more competent to advise you; but if you only propose to grow a limited number, as you say, perhaps I can best aid you by telling you how I grow grapes on a small scale, and as a house is best built by commencing at the ground and building upward, so perhaps we had better commence at the ground and work upward."

"That will just suit me. Now what about the location?"

"Well, my own location was a very favorable one. I was half a mile from the south shore of Lake Minnetonka, and about 100 feet above it, thus getting well above low frost lines."

"A good location, I should think. And now what about the slope of the land?"

"In this I was also favored, for I had a gentle south slope, which is doubtless the best. I should call a southeast or east slope next best, a southwest or west slope next, and, lastly, rather than have no grapes, I would try a gentle north slope."

"And suppose your land was level."

"It would answer if well drained."

"How would you prepare the ground?"

"First, have your land in good condition for raising a good crop of corn or potatoes; then plow deeply and cultivate thoroughly, as you would for corn."

"How far would you place your rows and your vines apart?"

"The standard distance is eight feet apart each way, but for a small vineyard, such as you propose, I should much prefer to have the rows ten feet apart and the vines eight feet apart in the rows."

"Why plant the rows ten feet apart?"

"In this latitude the grapes want all the sunshine they can get in order to ripen and color them well, and ten feet gives the sun a much better chance than eight; and then one-third of your space is not continually in the shade of the row below it."

"Which way would you have your rows?"

"I prefer east and west, and at least on a south slope should certainly plant them so."

"How many vines would probably suffice, for a small family like mine?"

"Well, perhaps forty. Don't make the common mistake of planting too few."

"Shall I plant cuttings, yearlings or two-year-old vines?"

"Plant two-year-olds, every time and no others."

"Where shall I get the vines?"

"From your nearest reliable nurseryman, or some other in your own or adjoining state."

"Well now, what varieties shall I plant, and how many of each?"

"That is rather a hard question, and perhaps no two grape growers would make you out similar lists. I think this would do fairly well: 10 Delaware, 10 Concord, 10 Brighton, 5 Iona and 5 Rogers No. 15 (Agawam). Unless your location is quite favorable, substitute some other for the Iona."

"Well, now suppose that before I sent off my order I should conclude to plant sixty more, for commercial purposes, to pay the expense of keeping up and working the vineyard, what varieties would you recommend for these sixty?"

"Just add this postscript to your order: 'P. S. Please send me sixty more of your best two-year-old Delawares.'"

"You seem decidedly favorable to the Delaware."

"Yes, sir; both for excellence and profit it is the king of Minnesota grapes."

"How is it best to plant?"

"Be careful to have your vines all run in the same direction, and if they run from west to east, then plant them at an angle of about forty-five degrees, sloping toward the east."

"What care will they want the first season?"

"Practically none, but to keep the ground well cultivated and clean, and the vines may lie upon the ground. The second year one or more small stakes will be needed for each vine, and the third year you will want a trellis.

"In what shape would you train the vines?"

"For this latitude, train as a single arm or vine, with upright branches, tied to the wires, while the arm is tied to the lower wire and dropped down when pruned for covering."

"Well, now, about that trellis?"

"You have intimated that you would not mind a little extra care and expense for the sake of having things about right. Then put in a good, dry, six feet white oak, cedar or tamarack post, every eight feet, and brace the end posts. Your post will stand four feet or a little more above ground. Don't make your trellises more than ten vines long. I like six much better. Now put on four strands

of the ordinary grape wire (No. 12 annealed), and your trellis is done."

"Don't some people use less?"

"Yes, some people use fewer posts, and also fewer wires, but I don't like the plan."

"How shall I place the wires?"

"Place your first wire eighteen inches above the ground, and your second eight inches above the first. Place your fourth wire at the top of the posts and divide the remaining space with the third wire.

"I don't need to go into all the minutia of pruning, training, removing laterals and all that. You will want some good small grape book or pamphlet for that and, perhaps, a little instruction and advice from some grape grower."

"Well, now, about winter covering?"

"After fall pruning and before dropping the vines for covering, go along with a hoe and dig a small trench about three inches deep under each vine; then drop the vine into the trench and fasten it down with some small, sharpened stakes, or a few shovelfuls of earth, and the vine is ready for covering.

"Plow rather shallow or cultivate deeply all the space between the rows, and with long handled, round pointed, clean, bright shovels. Cover the vines well, for winter protection.

"And now a special word of caution: Don't take the earth away from the roots of your vines to cover with. Remember that the roots need more cover and protection than the vines do. People often kill their vines, or at least many of the buds, by removing the earth from over the roots, and then the next spring they generously give the winter all the credit for killing or injuring their vines.

"After covering the vines, cultivate well all the spaces between the rows. This cultivating is a great protection against freezing; and for your small vineyard I am much inclined to think that it would pay you well to cover all the spaces, vines and all, with three or four inches of straw or, better still, with hay. And now you are ready for winter."

Mr. J. W. Murray: I cannot lay too much stress upon this protection of the roots of the vines. Right here I want to correct a false report which went out from Minnetonka about a half dozen years ago. It went out that the vines were very badly injured by winter-killing. That report has never been corrected. That winter that hundreds of vines were killed was one of the moistest I have ever seen in Minnesota. I left out hundreds of vines on the trellis that were never pruned or laid down. Those vines went through the winter almost as well as those that were laid down and covered deeply and thoroughly. Within a short distance of the village was a little vineyard of about a thousand vines. The vines were not pruned or laid down, but they remained on the trellis all winter, but out of that thousand there were not more than twenty vines killed. The next year they bore a tremendous crop. I presume the vineyard overbore, and I doubt whether it has been worth much since. Now why were they not killed?

The summer before had been one of the driest in the history of Minnesota, and I have been here for forty-five years. You could

hear everybody say it was dry from fourteen inches down to fourteen feet. I guess it was dry all the way down and half way back. (Laughter.) The summer before and the fall was so dry that the ground was like an ash heap. That summer, however, being so dry, was a splendid season for the production of grapes, and the vines ripened their fruit finely. The vines overbore, and my Delaware bore from twenty-five to thirty pounds of grapes each, and I do not think one of them has borne a good crop since. Now what I am getting at is that the main cause of the killing was the summer heat. There was no such thing as winter-killing. This vineyard on the hill I spoke of was a young one. It was not exhausted by overbearing; it stood the winter all right. The point is this, in very dry seasons you may sometimes have your vines summer-killed and then the next spring you call it winter-killing. The remedy would be irrigation, but, of course, we are not in a position to apply such a remedy.

Mr. Hobart: How many miles north of here will the Delaware succeed?

Mr. R. H. Pendergast: I have been growing grapes on Lake Superior for thirty years, and I have found the Concord and the Delaware will not ripen. But the earlier grapes like the Moore's Early and the Janesville will ripen. We have that difficulty, that we have not the requisite heat.

The President: Would they do better some distance away from the lake?

Mr. Pendergast: The whole country around Lake Superior is a cold country. That is what makes it a popular summer resort. Our strawberries and raspberries are better than any I have ever seen.

Prof. Washburn: The Worden is the most delicious grape I ever tasted. Why not put that in the list?

Mr. Murray: You cannot ripen it, and if it does ripen it shells off so badly that you can scarcely get a ripe cluster. If I were planting again I hardly think I would plant any Worden.

Prof. Green: I would put the Moore's Early in the same class.

Mr. Murray: I have left it out entirely. With us the Moore's Early is one of the poorest bearers we have. The vines kill, the buds kill, you can hardly get a good vine. They never bore me a full crop, and I left it out entirely. I hardly think I would plant it at all, although if it would bear well it would be one of the very best grapes to raise.

Mr. W. L. Taylor: I would like to emphasize what has been said about Moore's Early, and I would like to ask a question about the Delaware. I live on the E. J. Cutt's place, and I am digging out the Delawares because I have a better sale for the Concord. It does not fail to ripen with us, but I can raise one hundred bushels of Concord to one of Delaware. I have some grapes that were not covered before the freeze came. Would it be better to put on manure, hay or straw for covering?

Mr. Murray: I think anything would do that would not injure the vine.

Prof. Hansen: About the Moore's Early. We were familiar with it in Iowa. They found the Moore's Early a very poor bearer if it is not trimmed right. It should be trimmed with from five to seven buds. In that case it is a very fair bearer, although it is not as productive as the Worden. That is also the greatest objection we have had to the Worden.

Mr. Murray: How do you get your vines covered?

Prof. Hansen: We cover the ends of the canes.

Prof. Washburn: Are you seriously troubled with insects?

Mr. Murray: Not to amount to much.

Mr. P. H. Perry: Has any one tried the Campbell's Early?

Mr. Taylor: I have some on my place, but do not like it as well as the Concord.

Mr. R. A. Wright: I had only one fault to find with Mr. Murray's paper. I think the Concord pays better than the Delaware. The Concord proves more profitable around Lake Minnetonka.

Sec'y Latham: I do not like to talk upon many subjects, but I do know a little something about grapes. The Delaware has not done very well this year. I think it has been because the growers have not sprayed them. I sold my last vineyard last spring, but while I owned one I always sprayed, and I am confident the cause of their not ripening was because they were not sprayed. At the time the mildew came and became a serious thing I know I had to spray my vineyards while I had control of them. There is always a little mildew on the vines, but not always enough to seriously injure them. If there is enough to take the leaves off the fruit will not ripen, and the people find out that the Delawares are not good. I do not think the vine growers ought to grow that kind of fruit, and they can avoid it by spraying. Grape vines should be trained on the trellis to the east. In my first vineyard I planted about five hundred vines, and I thought it would be a nice thing to train them toward the setting sun. I had some poetic notions then, and my vines were trained toward the setting sun. They struggled with the elements for several years, but they were stubborn and I could do nothing with them until I turned them toward the east. If trained toward the west the wind forces the foliage back towards the east and north, because the prevailing winds in summer are from the west and south. This is an important feature in keeping a vineyard in good shape. Mr. Murray advises planting ten feet apart. That same vineyard has done wonders at fairs, and yet the rows are planted only six feet apart. That vineyard has been bearing thirty years. It is true it is not quite so convenient to cover. The point is right here, in the summer the sun shines on one side of the row in the morning and on the other side in the afternoon.

Mr. Preston McCulley: Would you not rather have the rows running north and south?

Mr. Latham: No, sir, I would not.

Mr. Brackett: I think there was a suggestion made in regard to the depth at which they should be planted.

Mr. Murray: I suggested deep planting, but I suggested nothing beyond that.

Prof. Green: I want to answer the question that has been asked as to how far north grapes can be grown. I have eaten some very nice Delaware grapes on the shores of the lake near Aitkin. I was going to say something as regards diseases of the Delaware. I think we have more trouble with the mildew than with anything else. I think that is the reason why the Delaware has not been a success for the past two years. The remedy is that we must spray with Bordeaux mixture. In regard to this winter-killing, I want to take issue with Mr. Murray on that. If he remembers, the vines that grew in sod that year did not winter-kill. The vineyard he speaks of was loaded with weeds, it was simply covered with weeds. I think if you would ask Mr. Dewain Cook he would tell you that they kill almost every winter until they are mulched. We had a winter when the ground was bare, and we had just such conditions around Lake Minnetonka as Mr. Cook has in southwestern Minnesota.

TOP-GRAFTING THE APPLE.

SETH H. KENNEY, WATERVILLE.

I began over forty years ago to try to get an orchard. I need not tell the older members of this society of my failures. We all have had them. I lost two orchards by root-killing. I did some top-working more than twenty years ago on crab stock. The trees remain today good, healthy bearing trees. One was a Pewaukee, not considered very hardy on its own roots; it was grafted eighteen inches above ground, and the graft has outgrown the crab stump, but it has borne large crops of fine fruit. The other was Transcendent top-worked with Whitney crab—in this way it never has suffered with blight. These trees led to top-working the Pewaukee on Virginia crab about five years ago with success.

Three years ago I set thirty-one two-year-old trees of Missing Link, and I cut 1,000 grafts and grafted on crab trees. This third year many of the grafts bore apples, so that I gathered three bushels. Here I had a good opportunity to see that a variety that did not succeed as an orchard tree was hardy enough to do well grafted on crab. The apples were of uniform size and have the name of keeping one year or more. A great many of the grafts did not bear last fall, so another season I look for quite a bountiful yield. I made a great mistake in cutting off too much top the first year, which forced the grafts to such a degree that many of the limbs blighted some. Since the first experience I have whip-grafted in the top of the trees as much as possible, and if any of the grafts fail no injury comes to the tree. The three bushels this fall is the result of top-working on crab stock.

The same spring I top-worked sixty Duchess trees with Malinda. The Duchess apples got ripe early and were harvested. The Malinda then had all the top of the whole tree, and the three-years' grafts produced seven bushels of winter apples. One box I brought to this meeting.

Three years ago I grafted some Seek-No-Further apples on crab stock. They made very fine specimens, which I also brought to this meeting; also one variety of apple from Iowa named "Isherwood," that originated in Canada—this from a two-year-old graft; and quite a variety that I obtained from Mr. Ivins, a nurseryman from Iowa Falls. These I brought, thinking some of our Iowa neighbors might recognize them. I visited the orchard of Andrew

Top-worked apple tree. The points of union are where marked with x.

Wilfert, of Cleveland, and obtained scions, and two years ago set seven Yellow Siberian trees of his variety for winter use. None of these will bear till next spring. Last spring I continued the work.

I wish to call your attention to one thing, that in thirteen varieties that I have top-worked as far as they have borne I have not made a single failure. The reward is so quick and certain. While I confess I do not understand why the sap from a crab apple tree imparts hardiness to tender varieties, I have seen it to my mind so clearly that I feel quite sure if I had known what I do now twenty years ago I would have had at this time a very large orchard. I think I owe a debt of gratitude to this society when I see this top-

working succeeds so well. I think we shall raise the Ben Davis, the Baldwin, Northern Spy and a long list of apples that the society had thought we could not grow. The new seedling list now grown in Minnesota, and the capture of the Wilder medal at Boston, Mass., speaks volumes for the work of this society.

There are a great many problems connected with this work that I have to say I do not know but come to these meetings to learn. The twenty-seven years that I have, I think, been to the meetings almost constantly, has been a great pleasure, a source of profit financially. I have not given close attention to orchard work in grafting till the last three years. Our late president thought

Top-worked apple tree on place of R. H. L. Jewett, at Faribault.

horticulture should "be taught in the schools." He also said the "Crab trees of Minnesota were as hardy as the oak." There is pleasure in raising the winter apples, assisting nature to produce the fruit. There are many problems left to mankind to work out. Do not any of you believe for a moment that the great Creator has not placed in our reach a way to make Minnesota the best fruit state in the Union.

Mr. Philips: One gentleman recommended three varieties. Mr. Yahnke and I have four varieties. Would you recommend a man spending his time on the Missing Link when he can top-work such apples as the Wealthy and the Northwestern Greening. Would you have him take the Missing Link?

Mr. Kenney: I put in the Missing Link because I thought I could get apples the year round. I did not get them for commercial purposes.

Mr. Elliot: I just want to illustrate one point in this paper, and that is, one of the offspring of those Malinda apples was top-worked on the Duchess. The point that interested me was that very thing, the fact that he top-worked that Duchess right in the top, and four or five of the scions are living and producing fruit, while the tree below it is producing Duchess apples. Now in that Duchess tree producing that fruit up to the time of the maturity of the Duchess, they were drawing sustenance equally after that time, and the long maturing apple took the strength of the tree and produced that nice apple.

Prof. Robertson: I would like to ask Mr. Kenney whether he took the lowest branches around the outside.

Mr. Kenney: No, I take the upper limbs. I found the rapidity of growth on the upper limbs was five times that of the lower limbs. But I take the outside of the tree, that is the best place to get good results. I will say this, that I did not give the matter very much attention. I did not begin top-working until three years ago, I had so many other things to take my attention; but when I got apples I was sure I could raise only on crab stock it came to me that I was getting to be an old man, almost seventy years old, and I wanted to do work to get the most out of in the quickest possible time, get results just as soon as possible. I thought this practice might be useful in showing those of my age how to obtain winter apples in three years' time. This has given me good success. I have a tree twenty-five feet high from which I never got a peck of apples. I cut off a few limbs and put them on top of the Wealthy, and those limbs were as full as they could hang, and a great deal nicer fruit than I ever saw on the other tree.

Mr. Philips: Didn't the fertilizing have something to do with it?

Mr. Kenney: I couldn't say.

Mr. Philips: The Martha crab will do well if half of it is left.

Mr. Bailey: Can't we use Transcendent on the top? It blights mostly in the top—cannot it be used successfully, say, with the Virginia?

Mr. Kenney: Some years ago I used Transcendent to top-work some Ben Davis; the blight would start in below the graft, and I therefore don't consider it safe to use.

Mr. Bailey: I mean where we want to get the Transcendent?

Mr. Philips: The lower part of a tree over twenty years old was worked on the Whitney and never blighted.

Mr. Bailey: I want to raise Transcendent.

Mr. Kenney: I have not tried that except one graft, and that has not come into bearing.

Mr. Murray: The gentleman said that grafting Martha on to Wealthy would give you Martha. I have a beautiful Martha fifteen feet high. I have tried grafting the Wealthy on to Martha to make the Martha bear, but it had no effect, and I don't believe anything will make it bear.

Mr. A. F. Collman: I would like to ask a question here for my own benefit. After listening to Prof. Hansen and the rest of them this morning, I want to ask the question whether the Virginia crab is not the very best stock to propagate a good orchard on? Is it not the best stock that grows?

Mr. Busse: If I were to answer that question for myself I would say it is not. I always thought the Virginia was free from blight altogether, but it is not. It blighted badly last summer in the summer season, and I tried some old varieties top-worked, some were Northwestern Greening, Wealthy, etc. I do not call the Wealthy hardy as far as going into the winter is concerned, but I found the Virginia does not make as good a graft as the Hibernal. The last thing I grafted the Martha and Hibernal and Virginia, but the Hibernal, I think, is the best for grafting any variety. The Shields is a good one, it will not blight and makes a better graft than the Martha. I consider the Hibernal the best of all the varieties I have tried.

Mr. Philips: I told you the other day that Mr. Grimes gave me those Virginia crabs. I have been in this top-working business for thirty years. I have seen the Utter grafted on six different stocks, and in all my work I have never found anything equal to that Virginia crab. It will blight a little. There was nothing on my place two years ago that did not blight, even the Duchess and the Northwestern Greening had blighted limbs on. I could show you varieties that you never heard of blighting that blighted that year. I use my Hibernal, as Mr. Yahnke uses his, to top-work on. If I were going to set out an orchard for money, raise apples for money, I would settle down and plant the Virginia every year to top-work. Prof. Goff, in looking over my premises, said it was the best tree to top-work an orchard on. It grows a better top than any other tree.

Prof. Hansen: I visited Mr. Philips' place, and I know he has made a success with the Virginia crab as stock. I have had Virginia crab and Hibernal in hand for some time under our conditions in Dakota, and I find the Virginia is somewhat subject to leaf scab, and I prefer the Hibernal, as Mr. Busse has said. I rather think it would be better than the Virginia as you go further west. As far as Mr. Patten's statement is concerned, I think we are all agreed that young trees are better than two-year-old or three-year-old, but the difficulty is to make the average planter see it. Here is the practical difficulty, for the average planter looks at the matter from a practical standpoint; he wants good, strong, healthy stock something that the average farmer is able to see without putting on his glasses.

Mr. Collman: I wish to say another word about this Virginia crab. I have been in the horticultural business for a good many years, and I have experimented quite a good deal, perhaps a good deal more than I ought to have done, but I have never found better stock than the Virginia crab, and two or three years ago when my boys went on a farm of their own I said to them, "You plant Virginia crabs, and when they get to be two years old I will top-graft them, and they will live as long as you will."

Mr. J. B. Mitchell (Iowa): I wish to ask Mr. Collman whether he ever tried the Hibernal?

Mr. Collman: Yes, but I never liked it any better than the Virginia.

Mr. Mitchell: When doctors disagree things are apt to get pretty badly mixed up. I have had some experience in top-grafting, and I find that locality and condition make a great difference. Now in the case of Mr. Philips he is located on the Baraboo ridge, which is some two hundred feet higher than the surrounding country. He says the Virginia does not blight. I should think it would not in that position, but with me it does blight some. I have top-grafted the Virginia and the Hibernal, not extensively, however. In my work in recent years the Hibernal has succeeded best with me; it makes the best union in top-working; it has fruited the best, and in my estimation the Hibernal is far the best.

Mr. E. A. Smith: Several years ago in our orchard at Lake City we set out a lot of Hibernal trees and crabs, top-working them later on. Two years ago we top-worked a large number of trees with Wealthy, and they started to blight, and before the next season was over the trees were entirely destroyed. This summer we top-worked the remainder, and the success was less than at first. Recently going through those orchards with Mr. Underwood he remarked: "I am afraid the Hibernal is not going to be a good tree to top-work the Wealthy, but perhaps there are some other varieties more in sympathy with that stock."

Mr. Andrew Wilfert: I have top-worked the Jonathan on the Hibernal, also the Pewaukee, and they were the same size when top-worked three years ago last spring, and the one that was grafted on the Pewaukee had about fifty apples on. The one that was top-worked on the Hibernal has not borne yet, still it made the same growth as the other, and I think I can top-work them successfully. I set out some more. I set out a Hibernal that I know has been grafted on crab roots and then top-worked with winter apples.

THINNING PLUMS PAYS.—In the future the thinning of plums will follow closely upon that of peaches. At the Michigan experiment station one tree each of a number of varieties of plums was thinned, with a view of determining the value of thinning to help control brown rot, as well as to get finer and larger fruit. As near as was possble, the fruits were thinned so that no two plums would touch when fully matured. The fruit did not rot as bad and was much larger on trees thinned than on trees not thinned; also the trees did not break down where thinned.

If not pruned, an old hydrangea paniculata will produce a very large number of flower heads, but all of them small. It is merely a matter of overbearing and the consequent sacrifice of quality for quantity. The hydrangea should be severely pruned every spring before growth commences, cutting all of the last year's growth down to one or two eyes, and removing the weakest shoots altogether. When the operation is finished there should be more wood on the ground than on the plant, and the result will be a fewer number of panicles, but each of greater size and substance. To get the very best results in this direction, the plants should be pruned very low, so that the branches must start out quite near the ground.

THE RESPONSIBILITY OF THE AGRICULTURAL PRESS AS BETWEEN THE NURSERY ADVERTISER AND THE PUBLIC.

E. A. WEBB, GENERAL MANAGER, "THE FARMER," ST. PAUL.

I am glad of the opportunity of saying something on this subject, which is one that although not generally considered by the people at large is, I believe, generally by editors and publishers of agricultural papers themselves.

The lesson of our responsibility for the welfare of those about us is taught negatively in the very beginning of recorded history, where Cain exclaims to his Lord, "Am I my brother's keeper?" The answer is not given; but scanty crops and noxious weeds have made life burdensome for six thousand years and bear testimony to the tremendous significance of our mutual responsibility for one another's welfare in this world.

Our subject is threefold and comes home to each of us in a more or less degree of personal concern. In the treatment of it, however, I shall not be confined to its significance as to the nurseryman alone, but as between advertisers generally and the publishers of agricultural papers. Considered in the following order:

First: The agricultural press; its character; why it is influential; its editors and publishers.

Second: The public reached by the agricultural press; the class influenced directly by agricultural papers.

Third: The responsibility of the agricultural press to its readers in its advertising department.

First, the agricultural press: Those of you who have subscribed for and read agricultural papers for thirty years or more have witnessed a great advance in the character of these papers now from what they were thirty years ago. Then there were two or three agricultural papers of large circulation that were generally known. Among these I recall the "American Agriculturist," of New York City, at that time a monthly journal; and the "Country Gentleman," published at Albany, by Luther Tucker, and still published by his sons. I read the former with interest as a young man, although the thought of publishing an agricultural journal myself would have then been my last thought.

Twenty years ago the agricultural press had recruited to its ranks more or less valuable sheets, mostly less. The great West was fruitful of these productions, because the West was chiefly depending upon agriculture; but the papers themselves, with few exceptions, bore evidence of being edited by men of little practical agricultural knowledge or experience. A very noticeable improve-

ment has since taken place in the general character of agricultural journals. As a class, they rank today as clean, wholesome and ably edited as that of the best class of journals, and in my opinion they are destined to wield an increasing influence for good in the land, particularly if they maintain the same ratio of progress along the

E. A. Webb, manager of "The Farmer," St. Paul.

lines indicated in the next decade as they have in the past two. The improvement in the character of agricultural papers has been brought about largely by a growing demand for better farm journals, edited by men having practical experience and ability, and the necessity for more scientific methods both in the cultivation of lands and breeding of live stock, which are found profitable and necessary

to compete intelligently and successfully with other industrial pursuits.

Second, the public reached: A farmer may take half a dozen papers in these days without taxing his annual expense account to any great extent. The cost of papers is so low that few intelligent farm homes in the country are now without at least one paper that treats of agriculture in one or more of its branches, so that the agricultural press already may be said to reach people concerned in this occupation very generally.

The constituency reached by the agricultural press has likewise changed and is now in process of great advancement in agricultural knowledge, due to a number of influences which could be named, chief of which are the agricultural colleges and experiment stations and the governmental recognition of the supreme importance of fostering our agricultural industries. The Secretary of Agriculture is now a member of the cabinet—and it is a most remarkable fact in a country depending as ours does so largely for its prosperity upon the products of the soil that its relative importance to the best interests of the country at large did not dawn upon us earlier.

Today we are reaping the benefit of laws adjusted to favor American agriculture and are to some extent already supplying a world-wide demand for our farm products, which demand is destined to go on increasing in proportion as we intelligently comprehend our opportunities and take advantage of them.

We have in this country agricultural colleges and experiment stations in every state, and many men and women educated to improved methods are back upon the farms, each one an influence for good in their respective localities. These are the people reached and to be sought, whose influence and example is of much importance in their respective communities. Little wonder then that with an increasing demand for the best light on current thought and farm experience the farmer is looking to an enlightened agricultural press to keep him posted.

The third factor suggested by my subject is *the advertiser:* This is the man who through the medium of the agricultural press seeks to reach and interest a reading people in his wares. We have treated in what we have said chiefly with the character of agricultural papers and the nature of their readers, now we consider the responsibility of the press as to its advertisers. While there should be a direct relation between the advertising department and the editorial staff, it is too often the case that the two departments do not harmonize and differ in opinions as to policy and practice. We are to deal, however, with what we believe to be the responsibility of the agricultural press to its readers in its advertising department.

We believe we are correct in stating that as a matter of fact the agricultural press in its advertising department will be found freer from quack remedies, nostrums and fakes than other class journals; standing in this respect on an equal footing with the best magazines.

It will be seen by this then that the agricultural press as a class does aim at a high standard of ethics as to its responsibility to its readers. There are, of course, exceptions, but those sheets admitting advertisers of doubtful character will be found, on examination, to be weak and of little influence

The subject assigned to me contemplates taking it up more in relation to the responsibility of agricultural papers to nursery advertisers. The unfortunate situation is that there are comparatively few nurserymen using agricultural papers. Those who do, we believe, are uniformly conscientious in filling orders and endeavor to satisfy their customers and do as they agree in their advertisements. We believe, however, that nurserymen do not appreciate the value of the agricultural press as a medium to sell their stock, or they would use it more freely.

The men who are perpetrating frauds upon the people of the Northwest are not the advertisers of nursery stock to be found in the advertising columns of agricultural papers, but are irresponsible men with a beautifully printed and illustrated catalogue of trees and shrubs, not adapted to this climate, who go about the country soliciting orders from farmers and deliver stock untrue to name, which is too often selected from the brush pile of some Southern nursery or picked up as seconds wherever they can get them. These men never advertise, and it is strange that intelligent people who have been so often warned against the wiles of these fake traveling tree agents will continue to be tempted by a good talker and a highly colored plate book.

I do not remember that "The Farmer" has ever had a single complaint from any of its subscribers against any advertiser of nursery stock in our paper. Our uniform method in accepting advertisements from people we do not know is to address a letter to a bank in their town, enclosing a stamped envelope for reply, requesting a report as to the character of the advertiser and his financial responsibility. We have never failed to receive to such questions as we ask uniformly courteous and satisfactory replies—either favorable or unfavorable—and they have given us our cue. While it might be said that it would be natural for us to inquire into the financial standing of an advertiser before accepting his business, it is a matter of fact that the financial standing of the advertiser has very largely to do with his general character. Men who are classed as

fakes are seldom, if ever, those who have any standing whatever in the community where they live and would not be favorably reported by a bank. Their record is soon established; and the banks make it their business to keep posted as to the character of the people they are doing business with and those who might become their customers. If, too, a man is responsible financially, and he perpetrates a fraud upon a customer, he can be made to make it good. It is upon his home record that we determine who is and who is not entitled to become an advertiser.

The advertiser may, however, be fully responsible, and yet his business methods may be such as to bring disappointment and loss to his customers. This, of course, we can never always fully determine on the start; but we make it a rule to inquire very particularly into the causes of every complaint received from our readers against any advertiser, and if there is evident carelessness on the part of the advertiser in filling orders we discontinue the advertisement pending a more thorough investigation.

There is great variety in the way different nurseries pack their stock. Some of the largest Eastern and Southern concerns often are the most at fault. Work is always done in a rush, the packing season is short and help sometimes scarce; at such times men are pressed into service who are not competent to pack the stock safely for shipment. It is unfortunate that this is so, but the agricultural papers themselves are not responsible for it and cannot protect its readers unless the carelessness is reported. Again, customers themselves are too often ignorant of how to unpack and care for the stock on arrival, and here comes in another complication for which the farm paper cannot be blamed. The work done at the nursery must be done in a thorough manner, and we believe it would be well for nurserymen to have written or printed instructions delivered with the stock in every case. Some nurserymen do this, and it is an advantage to them, for it instructs the customer, who too often needs the information.

To sum up the subject: We have endeavored to show that the agricultural press is growing in intelligence and capacity; that the responsibility of the agricultural press to the public is recognized by the editors and publishers of the papers themselves, and that an earnest effort is made by most publishers to maintain a high standard in determining the character of advertisers entitled to acceptance; that the constituency reached is becoming a more intelligent class, and that the nurserymen themselves to some extent, in common with all advertisers, come in for a share of responsibility, which must also be felt and recognized by them in this connection.

PROTECTION OF SONG BIRDS.

MRS. J. B. HUDSON, LAKE CITY.

We read in Ecclesiastes "There is no new thing under the sun," so today the study of birds and song birds in particular is new only in the increasing popularity and enthusiasm the bird lovers of today are giving the subject.

The first great impetus to bird study in this country was given by John Audubon over a hundred years ago, who by his spirited delineation of American birds has made his name familiar to all students of nature. So closely is he identified with bird lore, that most of the societies for the study of birds are named for him.

Of the goodly number of these societies in the United States the one common clause in the constitution is, "No one shall shoot the song birds, rob their nests, disturb them during the nesting season or wear their plumage."

The small boy and the woman are birds' worst enemies. The boy under the guise of collecting robs nest after nest. He soon tires of the collection, and they are destroyed. He has learned very little good beyond the names of the different birds and that he has so many varieties of eggs. He puts no value on bird life and soon from pleasure or sport joins the rank of bird destroyers. Then we have the woman who, more through ignorance than indifference, causes the wholesale slaughter of birds for millinery purposes. It is estimated that 150 millions of the snowy heron, from which aigrettes are obtained, are killed annually.

Once one becomes interested in the live bird the dead bird loses all charm for him. Some one has said, when you know six birds, their markings, colorings, habits, etc., the study becomes so fascinating you cannot drop it. Now I am willing to make a more radical statement: I will say, when you know one bird—and I will take our most common doorstep neighbor, the robin. Learn the male from the female, watch the male when he comes north in the spring followed in three or four days by the female—watch them during the courting season, how he follows her, singing his sweetest songs, strutting up and down in a lordly way, his bright vest showing off to the best advantage, picking up a twig and in various ways coaxing her to go to housekeeping. A pair in my yard two years ago gave me much pleasure. He insisted on building high in the oak, and she preferred the lower and more protected branch. He would carry up the twigs and material to the higher place, and she would immediately remove them to the lower site. As is often the case in our domestic life, for peace and harmony the female had her way, and then the nest building progressed. He helped in the rougher

outside work, but when it came to the inside that alone was her work. It was she who carried the mud from where the water dripped off a rug, and it was she who patted and formed with her little feet and breast the round little home. The four blue eggs were laid, and she sat so contentedly while Mr. Robin in a tree across the road sang "cheer up! cheer up!" He was willing to sing to her, but like many men thought it was for her entirely to do the family work. But Mrs. R. thought differently. She would often call to him, he would come reluctantly nearer and nearer, she waiting patiently for him to snuggle down on the eggs before she would leave. Again she would go directly after him and bring him back. She always seemed to know just what tree he was in, too. Then came the intensely interesting period when the young were con-

Mrs. J. B. Hudson, Lake City.

stantly clamoring for food, and when they were leaving the nest, teaching them by dainty bits of food to fly farther and farther, teaching them to bathe and many amusing things one sees who has eyes and uses them.

To the enemy of the robin, for the cultivated fruit he eats I would quote from Wm. Dutcher on the economic importance of this bird, and such an intimate knowledge of one pair will excite a desire for facts regarding other species, which you can very easily bring to your door by putting out a bathing pan in summer—one of the large shallow milk pans answers the purpose very well. Put up a

house of three or four rooms for the martin, and anything from a cocoanut shell to an old tin can will answer for the house wren—and they are such industrious foragers, living almost entirely upon insects, as caterpillars, bugs, spiders and their allies. But if the wren had nothing but his little song to recommend him, one is well repaid for the trouble of furnishing him a house, for he has such a cheerful, musical song and is so persistent in singing. One day by actual time my wren sang his little song five times in one minute. Now that means a good many bursts of gladness from one little throat in a day or a week.

A line with bits of cotton string and colored thread soon solves the question can birds discriminate between colors. But to learn these secrets of nature one must put himself in sympathy with nature. One must become a part of the scene. For instance: I have a piece of suet and pumpkin seeds near a window where I sit and work in the winter. Then in a moment of rest by a chance look many an interesting incident I have seen of the winter birds. I could tell how my blue jays come for breakfast every morning, my nut hatches come for lunch, how distressed my downy woodpecker was one day when he came and found no suet in the accustomed place, the blue jays having picked it to the nail, and it dropped into the snow—and his cry of delight after searching many minutes and seeing it at last on the ground. In just the little while I have been interested in our song birds I have seen many things I have read about and, much more delightful, many things I have never seen in print. I give it very little time I would give to any other work, but now the pleasure of a drive or walk is enhanced by perhaps a vivid dash of scarlet as a tanager slips through the green leaves, the shrike, or butcher bird, is seen to impale a mouse or smaller bird on a barb of the wire fence, or nests are discovered in almost every tree. The eye is trained, the ear is educated in bird songs—and where do you get such perfection as in the song of the brown thrasher? And, best of all, we have awakened a feeling of human brotherhood and a sympathetic interest in our feathered friends.

So much for the sentimental side of bird study, for through this side we reach most people first. The practical side appeals later, let us hope not too late, for our song birds until very recently have been disappearing very rapidly, the main causes being the robbing of nests, the gun in the hand of the small boy and the would be sportsman, ornaments for hats and, by no means least, the quantities of English sparrows that are spreading all over this country and Canada. These causes can to a great extent be removed. We have no

dearth of laws, but they are practically a dead letter regarding the song birds. We must reach the boys and girls in the schoolroom, educate this generation, and we have the law makers and the bonnet wearers of the next—any effort directly or indirectly where women can be induced to substitute something besides birds and skins and feathers for adornment and a systematic organization throughout the country for the reduction of the English sparrow. Educate the farmer and the horticulturist to the economic value of the birds, and they will be their best protectors. The farmer is prone to look upon most birds with suspicion. He will tell how the Baltimore oriole eats his peas, but he cannot tell you how many cutworms and injurious insects that same bird destroys.

The king bird has a habit of eating his honey bees, but here is what Prof. Beal, of Washington, says: "After examining 281 stomachs of king birds, only fourteen contained honey bees. Of the fifty bees in these fourteen stomachs, forty were drones, four workers and six unable to identify sex." For a long list of similar analysis of bird stomachs, quoted by Prof. F. L. Washburn, see page 355, Report of this Society for 1903. These same men fail to put on the credit side of this bird the countless numbers of beetles, weevils; wasps, grasshoppers, robber flys and other insects that prey upon fruit, grain and even their honey bees, far outnumbering in good the fact that they do eat a very few honey bees. I could go on indefinitely quoting you statistics from the United States Department of Agriculture, but you would not remember the statements, and if you are interested in them a postal sent to Washington will bring you without expense these bulletins, giving you full information as to the insects, weeds, etc. each bird destroys.

Now talk this matter up with your friends through the school, the church, wherever and whenever the opportunity offers, and we will soon have a working force that will see the laws are enforced. There will be an increase in the planting of trees, a suppression of recklessness in chopping down woodlands, and you will be rewarded by having a corps of winged workers around your home, farm and city.

Prof. Washburn: I want to endorse one thing the lady said. I think it is one of the most terrible things imaginable to see a young boy in the spring take an air gun or a sling shot and kill the birds, and I hope the society will take some action toward stopping that practice.

Mr. Yahnke: I would like to ask the professor what in his estimation is the best method to teach the boys the value of the birds and to induce them to protect them?

Prof. Washburn: I think the school teachers have that in their hands.

Mrs. Hudson: I would like to tell of a little incident that came under my observation of a little boy who was a regular little missionary. One day another boy had a sling shot and insisted on throwing stones at the birds. This little boy talked to him, but he could not induce him to desist. Finally every time the other boy aimed at a bird this little boy would strike his elbow. He did that several times, but all this time he was earnestly talking to the boy with the sling shot. Finally the boy became interested and dropped his sling shot, and it was not very long before we had that boy working in our society. It is just in such ways we have got to meet children. You have got to interest the women and boys personally.

Mrs. Ida B Thompson: We have just organized a bird society in Duluth, and I would just like to ask whether it is a good plan to exterminate one kind of birds to support another, as the plan is carried out in exterminating the sparrow. Children will not learn to discriminate. Is it wise to tell a boy that he may shoot a sparrow but he must leave the wren? Is it possible to teach him to discriminate?

Mrs. Hudson: I do not believe I would put the matter into the hands of the small boy. I do not believe in letting the boy kill sparrows. They cannot tell the English sparrow from other sparrows, unless they are exceptionally familiar with birds, and I would not say that the small boy should be permitted to take that matter in his hands. There are enough grown people interested to take up that work.

Mr. J. S. Parks: I think it is perfectly proper to teach the boy to discriminate between the birds that are good and bad. I think it is feasible to do so; we are trying to teach a cat to discriminate, and she is learning fast.

Prof. Hansen: The question of birds is one that bears an economic aspect. In France and portions of Europe they have found it very necessary to distinguish between injurious and beneficial birds. They teach it by means of charts and in other ways. I am very glad to hear that the Audubon Society of Minnesota has made a good beginning in that work. It has been found in France and other parts of Europe that when the laws for the protection of birds were repealed there was such an increase of injurious insects that they had to pass those laws again. There is a very intimate relation between the decrease of birds and the increase of injurious insects, more than most people appreciate.

Mr. Harrison: How do they treat the English sparrow in Europe?

Prof. Hansen: By the demands of nature and the enemies which follow it, its numbers are gradually decreased. It will have more enemies in America after a time. Sometimes a weed will come from the old world in the same way, but it is gradually eradicated or held in check.

Mrs. Stager: I remember when the first sparrows were brought from England to New York. The last time I was back there they told me they had almost destroyed their other birds. It is something like the rabbits in Australia. I think something must be done with the English sparrow. In our neighborhood there are fewer birds

than when I came there. The sparrows seem to drive the other birds away.

Mr. Stockwell: I think the most important agency for bringing this matter to the attention of young children is through the schools. We have got to reach the children through the teachers. It seems to me we could do a very practical thing this afternoon by appointing a committee to attend the meeting of the Educational Association and to forcibly bring this matter to the attention of the teaching forces of the state. If it is in order I would like to move the appointment of a committee, of which Mrs. Hudson is to be chairman, to bring this matter before the Minnesota Educational Association.

Mrs. Hudson: There are so many in the state that know a great deal more about this work than I do that I really think it would be better to name some one else.

The President: I think the suggestion is a very good one, but I am almost afraid if we put Mrs. Hudson on that committee she would be too modest to appear before the association.

Mr. Stockwell: We want the committee to present this matter immediately to the teachers.

Mr. Brackett: There was a little boy five or six years old who met some rather bad boys on the street and learned to swear a little. His father learned of it, and one day he said, "Johnny, I understand you have been swearing." Johnny asked, "Who told you that, papa?" The father replied, "A little bird told me." "Well," replied Johnny, "it must have been one of those d——d sparrows." So you see the sparrow is held responsible for a good many sins. (Laughter.)

Mr. Philips: I want to say a word about this bird question. One of the men I admire most today is Geo. T. Angell, of Boston; I think he is doing a world of good with his paper. I believe, as Mrs. Thompson, of Duluth, does, that we cannot go into our schools and tell the boys it is wrong to rob a bluejay or a robin's nest and then tell them it is right to rob a mother sparrow's nest. I built a new barn and put on a cupola. The sparrows would come there and eat with our ducks. When I built the barn and put up that cupola in I had some slats put in, and they got in there and built their nests. They acted just as though they thought that was built for their special convenience, and I never saw a happier lot of birds, but they spoiled a lot of hay. I saw I could not stand that, so I sent the boys up there with some screening and had them put in over the slats, and I want to say that it would have made anybody feel sorry to hear those little fellows begging to go in there. I did not want to disappoint them too much, so I fixed up a place behind the barn for them to go in. You cannot tell a boy it is right to kill one bird and protect another.

BUSH FRUITS.—Not one farmer in a hundred raises all the small fruit his family can use. The fruit garden should be on good land and near the house. The land should be well drained. A good fruit garden may mean a few less bushels of oats and corn, but the farm is made more homelike and is supplied with the comforts and luxuries of the table.

HARVESTING AND MARKETING THE SMALL FRUIT CROP.

ALFRED O. HAWKINS, EXCELSIOR.

This subject I consider a very important one. My experience in marketing small fruit for a number of years was on the Minneapolis market. The last three years it has been handled by the Excelsior Fruit Growers' Association.

This business must have careful attention. It is necessary to have plenty of nice, clean packages ready for use before the fruit is ready to pick. Never use old or second-hand packages, whether boxes, crates or baskets. When possible employ grown people for pickers and make a contract with them to remain during the picking season, with the understanding that they will be paid 75 per cent each week and the balance at the close of picking season, but if they do not remain they forfeit the 25 per cent. This is a necessary protection for the grower.

In the beginning the pickers should have instructions to handle the fruit without bruising, to pick clean, throw away overripe berries and fill the package up properly. When boxes are used each picker is supplied with a carrier. When the carriers are filled and brought to the packing shed, the one in charge receives the boxes, notes the appearance and places them in the bottom of the crate to cool off if in the forenoon, filling in the balance of the crate in the afternoon. Berries will lose their freshness and mold very quickly if picked when wet. The dew should be allowed to dry off thoroughly before picking starts in the morning.

Each grower must determine for himself which would be the most successful way to market his crop. The consumer must be reached in the most effective manner possible. Where small fruit is not grown on a large scale it may be most profitable to retail to private customers. Where acres of each variety are grown, the grower will be compelled to sell to grocerymen, keepers of fruit stands, on the market, to commission men, etc. In the vicinity of Lake Minnetonka we market our fruit most successfully through the fruit growers' association.

Much fruit goes to waste each year by not having enough pickers to handle the crop at all times, by improper picking and by careless handling. In conclusion, I wish to say, it matters not so much what we do in life but how we perform what we undertake.

Mr. Preston McCulley: What price did your berries average?

Mr. Hawkins: I can't tell you that.

Mr. A. Brackett: We picked a trifle over 11,000 quarts, for which we received something more than $600.

Mr. Baldwin: I would like to have some one give his experience with the folding box.

Mr. Hawkins: I never tried them. I always buy my boxes ready made.

Mr. Baldwin: I used about 2,000 of them. The quart boxes worked pretty well, but the pint boxes did not hold their shape very well.

Mr. Brackett: I think it is a good plan to have a small stock on hand in case you run out of boxes. It is hard to keep boxes in storage. It is a good thing to have a few to fall back on in case you run out.

Mr. Wright: The folding box is a new thing and perhaps has not yet had a sufficient trial. It is made of spruce wood, which dries out very quickly and by the time we come to use it it has shrunk considerably. If they are wet a little after the bottom is put down it will stay there. Put them in water and soak them for fifteen minutes or half an hour, and then let them dry out and you will find they are perfect. You will find very little trouble with the bottom coming out.

Mr. A. D. Barnes (Wis.): Is the Fruit Growers' Association confining itself to any particular kind of box?

Mr. Hawkins: No, we have not yet adopted anything from what we have been using.

Mr. Wright: Out at Excelsior we use the deep box entirely. We never use the Illinois box at all.

Mr. Barnes: In central and northern Wisconsin that is the box we are trying to adopt.

Mr. J. H. Shephard: Last winter I introduced a bill in the legislature regulating the size of boxes to be used to conform to the size of the Michigan box. There was quite a little discussion in regard to the box. I found the commission men of Minneapolis, St. Paul and Duluth wanted no law governing the size of the boxes. I think we ought to have a uniform size of box through the country for strawberries and raspberries. As it is now, they can send in undersized boxes from outside of Minnesota and undersell us. For instance, they send raspberries in here from Washington in what they claim to be quart boxes, but they only hold seven-tenths of a quart, yet they sell for the same price as our full quarts. We have had to sell them in pints. I found after the introduction of the bill that every commission man in Minnesota was fighting the bill, and I think this association should take the matter up next winter and endeavor to secure a uniform size for boxes. I also introduced a bill to prohibit the use of boxes a second time. I found the same opposition and from the same source. This matter should be taken up by your association and by the state board of health. It is not healthful to use the boxes a second time. They are full of microbes and bacteria and are not fit to use a second time.

MINNESOTA AS AN APPLE STATE.

H. H. S. ROWELL, MINNEAPOLIS.

The assumption indicated in the title of this paper would have excited popular ridicule in the early days of this society. That successful apple growing in Minnesota is a fact is even yet accepted by many persons only with large mental reservations. The following statements are merely the brief summary resulting from a review of pomological history in Minnesota. The past, present and prospective conditions of apple culture in Minnesota are summed up largely from the experience and observations of horticultural pioneers, with some personal conclusions. For purposes of brevity, the detailed elaboration of facts given is here omitted. The outline only is presented, under thirteen heads, as follows:

1. *Minnesota an apple state, as a fact.* Through half a century of experimental work by pioneer horticulturists, at a sacrifice of millions of dollars, the fact that Minnesota is an apple state has been demonstrated. The orchard "funerals" in Minnesota, following the "test winters" of 1855-6, 1872-3, 1884-5 and 1898-9 have been valuable object lessons. The "survival of the fittest" is the result. Early and repeated failures have been made the stepping stones to final success.

2. *Convincing exhibits of Minnesota apples.* About 1,000 plates of apples are now exhibited by this society, and more than 3,000 plates shown at the state fair, representing more than 300 named varieties, disproving the opinion expressed by Horace Greeley, in 1865, that Minnesota could "never raise apples."

3. *Secret of pomological success in Minnesota.* Success in apple growing in Minnesota comes from the origination of new varieties naturally adapted to this climate. Climatic conditions are here similar to those in central Russia, where apples are successfully grown, and Minnesota has the advantage of having over 5,000 square miles of water surface in its many lakes. The latitude is right for the production of apples of a superior quality. What is needed is the development of the right varieties.

4. *Minnesota leads in experimental apple culture.* Minnesota now takes front rank in its development of seedling apples, having recently won, for the second time, the highest honors from the American Pomological Society, for success in apple culture. Ten thousand seedlings were sent out about fifteen years ago by Peter M. Gideon, and from these are being developed many new varieties. Many of the pioneer horticulturists of Minnesota are engaged in similar work, and the results of their efforts indicate great possibilities for the future.

5. *Minnesota has the largest horticultural society.* The Minnesota State Horticultural Society is the largest body of the kind in the world, having grown, in thirty-seven years, from a membership of nine to one of 1,430. Early difficulties in fruit raising united Minnesota horticulturists. The society is an organization for earnest work in a common cause. It should soon double its membership.

6. *The Wealthy a Minnesota apple.* The Wealthy apple, originated about forty-one years ago, at Lake Minnetonka, by Peter M. Gideon, ranks among the best apples in the world. In its prime it has no superior in quality. It is now grown in many states of the Union and in the home market outsells all other apples. Mr. Gideon had vowed, after many failures, to succeed in raising apples or leave the state, and his development of the Wealthy entitles him to enduring pomological fame. The Wealthy apple is a source of great wealth to Minnesota, and the Wealthy apple trees form more than a million living monuments to the memory of Mr. Gideon. One nursery in this state has grafted and set nearly one million Wealthy apple trees in the last twenty years.

7. *Efforts to obtain an ideal apple.* The zeal and enthusiasm of Minnesota horticulturists is unbounded. They have repeatedly gained victory from apparent defeat and will yet develop the ideal apple for which this society has a standing offer of $1,000. Such an apple will be easily worth $5,000,000 to the Northwest.

8. *Recent rapid pomological development.* The United States has now probably 250,000,000 apple trees, with an average crop of 200,000,000 bushels. Minnesota has probably 2,000,000 apple trees, but not many yet in bearing. The Central West of the United States is becoming the great apple growing region of the world. The increase in number of apple trees in the United States from 1890 to 1900 was about 60 per cent, mostly in the Central West. In Minnesota there has been a very rapid orchard development during the past three years. A more exact annual pomological statistical record is needed.

9. *Promising apple market in Minnesota.* Minnesota is now the market annually for 1,000,000 or more bushels of apples from other states. It now produces probably 500,000 bushels annually, nearly all for immediate neighborhood use, but should soon supply home demands with 5,000,000 bushels annually. It already has the trees, and within five years will have the apples; but there is no danger of raising too many apples, as consumption will increase with the supply, and new markets to the Northwest will open.

10. *Apple growing in Minnesota commercially successful.* Apple growing is a commercial success in a considerable portion of

Minnesota, and may be extended to nearly all parts of the state, and in limited locations even 500 miles north of the Twin Cities, into Manitoba.

11. *Apple growing limit extended to corn limit.* The apple belt or zone can be made identical with the corn belt, which has proven very elastic, having already been extended into North Dakota. Even to the northern limit of wheat, it is possible to grow apples. Minnesota now ranks in twentieth place among the corn states, though it was once claimed that Minnesota could not raise corn. Its development as an apple state is equally apparent.

12. *The apple crop most profitable.* At the present time, with right care and location, the apple crop is the most profitable crop that can be raised in Minnesota. Under proper conditions, after coming into bearing, the Wealthy apple will average $100.00 or more a year net profit per acre. One of the best investments for a young man is the development of an apple orchard in Minnesota. The apple crop in Minnesota is surer than the orange crop in either Florida or California.

13. *Many present perplexities, but pathway pointed out by pioneers.* Countless horticultural difficulties are yet to be conquered in this climate, but Minnesota horticulturists can overcome all obstacles by continuous, united, untiring effort along the pathway of pomological progress which has already been blazed out by pioneer horticulturists. Minnesota can be and will be made much more of an apple state in the immediate future.

MAKING AND PLANTING THE ROOT-GRAFT.

W. L. TAYLOR, HOWARD LAKE.

In the receipt for cooking hare it says "First catch your hare." So in telling how to make the root-graft I will say, "first get your roots," the "how" of which this year appears to be a conundrum. The season in Minnesota is too short to grow first-class roots. Most nurserymen obtain roots from southern Iowa or Nebraska. These grown from Vermont apple seed are supposed to be the best in the market. Roots are usually graded as No. 1, 2 and 3. No. 1 is mostly used for large scions, but No. 2 does very well for some kinds of crabs and smaller caliber scions.

After the leaves fall is a good time to cut scions. They are tied in bunches of 100 and after being properly labeled are placed in damp sawdust in the cellar near the roots, which have been previously packed there.

Early in January we begin work upon the grafts. First, the scions are cut in lengths of five inches; then with a sharp knife make

a slanting cut on the lower end of the scion about three-fourths of an inch long; then cut in the opposite direction in the same place a little deeper in order to make a tongue; now cut off the top of the seedling root, and shape in the same manner as the scion; then place the two cut parts together in such a manner that there will be an almost perfect union of the two barks. The root is then cut off about three inches from the scion and another graft is made on the same root, one root making three or four grafts. The union of the graft is wound with waxed thread. The grafts are then packed in damp sawdust or sand to callous, or grow, together.

W. L. Taylor, Howard Lake, Minn.

When planting time comes be sure and have the ground in good condition. It should be plowed in the fall ten or twelve inches deep. As soon as the ground is in good shape to work, harrow it eight or ten times, or until it is smooth and firm. Now mark with a line, and then with a steel dibble make a hole seven or eight inches deep, place the root-graft in the hole so that the root rests on the bottom of the hole. Now with the dibble firm the dirt against the

graft by placing the steel two inches from graft, sinking it into ground as deep as graft and pressing the steel toward it. Eight to ten inches is a good distance between grafts. When all are planted go over the rows with a wheel hoe or garden rake in order to smooth the ground and loosen the surface.

Mr. Kellogg: I would like to ask him from which cut he gets the best result, from the first, second, third or fourth cut of the root?

Mr. Taylor: I find the first cut makes the best tree.

Mr. Kellogg: I find the second cut makes the best.

Mr. Andrew Wilfert: I find the root not cut at all makes the best. (Laughter.)

Mr. S. D. Richardson: I made some from the top cut and some from the fourth cut and put them right alongside of each other. I moved them at one year old and in the fall I got the biggest tree from the whip end of the root. (Laughter and applause.)

Mr. Yahnke: I was going to ask whether the scion has not just as much influence on the growth of the tree the first year as the root. I have experimented with scions from bearing trees and scions from young trees, and find scions from the bearing trees are of slower growth, and scions from the younger trees make the stronger growth the first year. I would like to know whether that is true in the experience of anybody else.

Mr. Philips: My experience is just exactly the opposite from yours. (Laughter.) I get the best growth from scions taken from a bearing tree.

Mr. Barnes: My experience has been almost identical with that of my friend Yahnke. I believe nurserymen will find that they can obtain the best growth the first year from scions taken from a young tree, better than from a bearing tree. I have kept so still this morning that I want to have the privilege of telling you a little experience I had with mulching. The question was asked here as to whether nursery trees that were mulched in the fall would go through a severe winter or not. It happened that a part of my nursery was mulched with leaves from trees near by, and where that condition obtained they came through without harm, but right by the side of them on the same kind of ground, having otherwise the same treatment, there were 80,000 young trees absolutely killed that winter. One fall I had a little time, and as I had some trees to transplant under contract I moved them to another piece of ground, and after they were planted I mulched them, and these trees came out in first-class shape in the spring, while every other tree was killed within two miles of where they were transplanted.

Mr. Taylor: I wish to say this in regard to mulching: Several years ago when we had that bad year for root-killing there were parts of the grafts mulched with stable manure, and on that part there was no root-killing, but on the part where there was no mulch almost all were killed.

Mr. C. S. Harrison: I just want to emphasize one thing, and that is, when you are doing root-grafting do the work thoroughly.

I was in a nursery establishment last winter where they were driving the men, and where a man was expected to run off 2,500 a day. I said to them, "You are just wasting your material and your time. There is no use in grafting unless you can make the scions and the roots join perfectly, and the way you are doing it it is impossible to do good work. You had better do the work right, and if you cannot make more than six hundred a day it will pay you." (Applause.)

The Chairman: There was a question asked this morning as to the advisability of sowing oats in the orchard. I would like to call for some experience in that direction.

Mr. Taylor: I think buckwheat is preferable to sow for winter protection, and if the grafts get weedy do not kill the weeds out, but let them stay weedy until the next season.

Mr. S. D. Richardson: I have been working in Minnesota since 1865. I used to sow buckwheat, but I quit it, and now I sow oats. Two years ago I was down at Mr. Wedge's place, and he had sown buckwheat, and he had sown rape, and I told him that I had sown oats and my protection was altogether superior to his, and my experience has been that a good growth of oats, letting it get up to about eighteen inches high, will give you a perfect protection for your trees. That winter that trees root-killed so bad I had sowed oats, and where my trees were not covered with weeds or oats I lost them all, but where I let the weeds grow and where the oats stood I did not lose a thing.

Mr. C. S. Harrison: What time do you sow the oats?

Mr. Richardson: From the middle of August to the first of September.

Capt. A. H. Reed: There is one point in the treatment of root-grafts that has not been discussed, and that is in regard to the material for winding. You want to wind your rootgrafts with waxed paper.

Mr. Elliot: L. H. Bailey says in his book on "Grafting" that we should use scions from fruit-bearing trees, and then others again come here and tell us they get their best results from scions cut from nursery stock. I have seen in some Minnesota orchards trees planted from which they expect to get only scions..

Mr. Yahnke: I suppose everybody has got his own opinion, and I have always believed, and I believe it yet, that it is better to cut scions from bearing trees, even if the trees are set back a little in growth the first year, for by the time they get to be three years old they will, as a rule, be up to the standard. I believe such trees bear earlier and we get more prolific trees by taking scions from a bearing tree. (Applause.)

The President: Can you get the scions?

Mr. Yahnke: The trouble is right here: Nurserymen are often unable to get them, and so they do the next best thing. I will state right here that a tree grown from scions taken from a bearing tree must be more expensive because it requires three times the work to cut the scions.

MINNESOTA FRUIT EXHIBIT AT THE WORLD'S FAIR.

DEWAIN COOK, JEFFERS.

(Mr. Cook was with the exhibit from Aug. 1 to 15.)

I reached St. Louis Monday morning, Aug. 1st, and found that we had the best exhibit of small fruits on the grounds. Cold storage apples were getting low; about all we could do with them was to keep them polished and carefully turned. About Aug. 5th half grown apples of the new crop began to come in; by the 10th they were coming in freely and of increased size but many of them of so small a size that we could not use them. —too many of them were Tetofsky, Whitney No. 20, small Yellow Transparents, etc., and crabs.

Right here is where the exhibitors of our state need to be educated a little; our apples have to compete with the monstrous ones shown by Washington, Colorado, Oklahoma and Arkansas. Varieties don't count; it is size and good appearance as well as number of plates that counts here. The only recommendation that I can make in connection with our St. Louis exhibit is that small varieties of apples and all hybrids be kept in Minnesota, and if crabs must be sent let them be few in number and of a size that they will not be mistaken for apples.

The Minnesota exhibit occupies one of the best locations in the hall and is well worth all that it costs by showing up the resources of our state. Favorable comments were far in excess of the criticisms, which almost invariably were made by Minnesota people who expected to see an exhibit, even out of our apple season, to exceed the grand exhibits annually made at our state fairs. Most of the people who visited the exposition during my two weeks stay there were from the southern states, and our exhibit was an eye opener for them, some even expressing a desire to live in a state that could grow such fine fruit.

I want to commend Mr. Redpath for his ability and untiring energy in keeping our exhibit in the best shape possible.

CONTRIBUTORS TO THE MINNESOTA FRUIT EXHIBIT AT THE WORLD'S FAIR JULY 19 TO AUG. 15.

July 19. H. W. Shuman, Excelsior: 50 pints red raspberries, Marlboro, Giant Iron Clad, Loudon; 15 quarts Pomona currants; 6 quarts North Star currants.

20. Clarence Wedge, Albert Lea: 25 quarts Loudon, red; 11 quarts Elder, black.

20. Jewell Nursery Co., Lake City: 62 pints Loudon; 21 pints Marlboro.

21. Rosehill Nursery, Minneapolis: 16 quarts Red Jacket gooseberries.
F. J. Empenger, Maple Plain: 24 pints King raspberries; 24 pints Minnetonka Iron Clad.
22. J. P. Johanson, Excelsior: 24 pints raspberries, Loudon, Marlboro, King, Golden Queen, Giant Iron Clad, Shippers' Pride, Miller, Nemaha.
Deephaven Nursery, Excelsior: 16 quarts Stewart Seedling currants.
F. B. McLeran, Wrenshall: 24 quarts Enormous strawberries.
23. Minnesota State Reformatory, St. Cloud: 16 pints raspberries, Cuthbert.
A. McComber, Duluth: 36 quarts strawberries, Seedlings.
A. A. Johnson & Co., Sebeka: 16 quarts blueberries.
24. F. Moeser, St. Louis Park: 24 pints Miller's red raspberries.
C. J. Hamustrom, Minneapolis: 12 pints Loudon and 12 pints Marlboro raspberries.
29. Wyman Elliot, Excelsior: 8 pints North Star currants, 6 pints Munger, 5 pints Columbian, 20 pints Loudon, 6 pints Miller, 4 pints Marlboro, 47 pints Nemaha raspberries.
29. Jewell Nursery Co., Lake City: 4 pints Columbian, 28 pints Loudon, 64 pints Nemaha raspberries.
30. Wyman Elliot, Excelsior: 23 Munger, 23 Marlboro, 2 Columbian raspberries.
A. A. Johnson & Co., Sebeka: 16 quarts blueberries. (O. H. Seamans sent part of this.)

Aug. 3. Clarence Wedge, Albert Lea: 1 box apples; Tetofsky, Okabena, Charlamoff, Lowland Raspberry, Duchess, Beautiful Arcade, Red Astrachan, Early Strawberry, Yellow Transparent.
4. Jewell Nursery Co., Lake City: 82 pints raspberries: Nemaha, Loudon, Columbian.
A. A. Johnson & Co., Sebeka: 32 quarts blueberries.
I. W. Wood, Long Lake: 24 pints Columbian raspberries.
A. Schlemmer, Chisago City: 16 quarts Lucretia dewberries.
6. F. I. Harris, La Crescent: 1 bushel Tetofsky apples.
J. A. Howard, Hammond: 2 boxes Duchess, 1 box Borovinca, 1 box Transcendent.
Clarence Wedge, Albert Lea: 1 box mixed varieties apples.
7. W. S. Higbie, Washburn: 48 pints Loudon and Marlboro raspberries.
7. Jewell Nursery Co., Lake City: 1 box Yellow Transparent.
John R. Cummins, Eden Prairie: 1 box Lou and White Transparent.
Seth H. Kenney, Waterville: 1 box Tetofsky.
Nils Anderson, Lake City: 1 box Eucranska apples.
8. A. A. Johnson & Co., Sebeka: 16 quarts blueberries.
A. Schlemmer, Chisago City: 16 quarts dewberries.
9. G. A. Anderson, Renville: 1 small box Tetofsky.
10. A. B. Lyman, Excelsior: 2 bushels Duchess.
10. Gust Johnson, Excelsior: 48 quarts blackberries.
10. Frank Balzer: Small box of Duchess and Tetofsky.
11. A. N. Wright, Owatonna: 1 box Gladioli, 1 box Asters.
12. Clarence Wedge, Albert Lea: 2 boxes apples.
12. A. Brackett, Excelsior: 1 basket apples.
Gust Johnson, Excelsior: 96 pints blackberries, Snyder.
15. Gust Johnson, Excelsior: 60 pints Snyder blackberries.
Jewell Nursery Co., Lake City: 1 box apples, Early Strawberry.
Briggs & Gray (Gideon Orchard), Excelsior: 2 bushels crab apples.
15. A. A. Johnson & Co., Sebeka: 16 quarts blueberries.

COMMERCIAL ORCHARDING ON THE FARM.

D. M. MITCHELL, OWATONNA.

We who are here represent to a great extent the people who have almost untold faith in our state as a fruit producing state. We meet here year after year and talk over varieties, location for the orchard, methods of planting, pruning, care, etc. I am not going to discuss these points; we have had a great many good talks on them at this meeting. The main point I wish to make is that every man who is producing enough fruit for his own use can if he has the room with very little more work and expense produce considerable for the market. Do not make up your mind to plant with the idea of producing some fruit to sell and then plant it on some tract of ground that will produce nothing else. Go into it as a business proposition; give your orchard as good a place as you have on the farm; give it the care you do your crops; look upon it as an investment, and as such look after it.

After you select your location, choose your varieties and get your trees and plant them as they should be planted, remember your responsibility has just begun. Do your part well and you will be surprised at the returns in dollars you will get out of it for the amount put into it. I am a firm believer in the commercial orchard on the farm in Minnesota; in my opinion it will become an essention factor in farming.

If there is one reason more pronounced than another why commercial orcharding is not carried on more extensively on the farm it is because we do not realize the profits to be derived from the orchard. There are equally as many and as good reasons why we should produce our own fruit and some to sell as there are why we should raise grain enough for our own use and have some to dispose of. Very few of us stop to think that the Wealthy in its season will bring from twenty-five to seventy-five cents more per barrel than the Ben Davis, Northern Spy or Baldwin. There is a man who has a fourteen-acre orchard not far from my place in Owatonna, composed principally of Duchess, Wealthy and Patten's Greening, who took $1,025.00 off of it the past summer. That is, as you see, a little over $73.00 per acre. Of course considerable money had to go for expense, which is true of all other crops. This also is quite a large orchard, probably larger than is advisable for the average farmer to start with commercially. I give this only to show what can be and is being done in Minnesota. If we can profitably grow enough apples on the farm for our own use, it is not unreasonable to say that it is a paying proposition to grow them commercially.

I said in the beginning that I was not going to discuss care of the orchard, and I am not going into details, but let us remember that cultivation is not one of the things that ought to be done, but it is one of the things that must be done. Many people look upon orcharding as a failure who have not given their trees half a chance. I am not advocating anything that is an experiment; commercial orcharding has ceased

to be an experiment in Minnesota. We as horticulturists believe a great many things possible that many people look upon as impossible, but I will say, in conclusion, that we can believe many more things possible in commercial orcharding, in even a small way, and we will still find we are then only beginning to realize what can be done in Minnesota.

Mr. Radabaugh: I think the idea of the gentleman in giving the commercial statement of what that orchard has done is one of the things we neglect in our society. He shows figures of what has been accomplished, and a great many people go into a proposition of that kind for the money they can get out of it. I think it is a good idea to report those figures in our society.

EVERGREENS AND OTHER TREES FOR HEDGES.

C. L. KEY, ST. PETER.

Twenty years ago I planted white willows for a windbreak and fence. They formed a solid fence, so that the horses and cattle could not go between them. Now they are so large and tall that the wind breaks them down, and the brush flies all over the place. I am going to have them cut into cordwood this winter and let them grow up again. By the time they grow large enough to blow down again, I will perhaps have "passed to that invisible land from whence no traveler ever returns."

The golden willow makes a good windbreak and fence and looks well in summer and winter. I would advise any one that is getting old like myself to plant them for windbreaks, as they grow quick. I planted a hedge of this this spring; now they are six feet high. If I were young I would plant red cedar for ornament as well as windbreaks. I have a hedge of them that are loaded with seed. I gather the seed in the fall and plant them right away. When they start to grow, they will require some sort of artificial shade for the first season. I tried growing some under the shade of forest trees, but they grow too slow that way for me.

There are three kinds of evergreens that I admire most. First of all is the red cedar, because drouth, wind, cold and wet never hurts them; next, are the balsam and ponderosa pine for beauty.

The mulberry makes a nice ornamental hedge. They are rapid growers. They bear berries every year. Some people make pies out of them. The birds will take them in preference to any other berry. I would advise any one that intends to raise small fruits to plant lots of them.

Honey locust makes a good hedge and seems to stand the winters all right. There are some trees in an old abandoned nursery near St. Peter that were planted twenty years ago. I gathered some seeds from them a short time ago. I am going to plant them; the trees seem to be in a thrifty condition.

The above mentioned are all hardy trees and will stand all sorts of weather and climates.

The lilac makes a lovely ornamental hedge. You can trim it in any desired shape you want. They leaf out early in spring, and stay green till late in the fall. The prickly ash makes a nice ornamental hedge. They have small red berries that hang on all winter. I prefer them to mountain ash for beauty.

Secretary's Corner.

WHO HAS CRANBERRIES?.—The secretary wishes to secure native cranberries from a number of sources for exhibition at the World's Fair in connection with the Minnesota display. Any of our members who have cranberry marshes bearing will confer a favor upon the secretary by corresponding with him on the subject.

O. M. LORD AT ST. LOUIS.—The many friends of O. M. Lord, Minnesota City, one of the veterans of our society, will be pleased to know that he is spending a couple of weeks with the Minnesota fruit exhibit at the World's Fair. Mr. Lord is also purposing to be at the Minnesota state fair with an exhibit of plums, and we may hope to have him with us again at our coming annual meeting.

PROGRAM FOR THE ANNUAL MEETING.—The program for this meeting is still incomplete. Suggestions as to topics suitable for the occasion are still needed by the secretary in the work of preparation. What subjects are there that in your judgment should be considered at that time? Please write freely to the secretary and give him the benefit of your thoughts on this subject. It is the purpose in arranging this program to reflect as far as possible the sentiment of the members.

PROF. JOHN CRAIG WITH THE "NATIONAL NURSERYMEN."—Prof. John Craig, who since the promotion of Prof. L. A. Bailey as director of the college of Agriculture of Cornell, New York, has filled the position of professor of horticulture at that school, has been engaged as editor of the "National Nurseryman." This journal while specially devoted to topics of interest to nurserymen is also of general value to all growers of fruits and flowers. The accession of Prof. Craig to this position will without doubt add materially to the practical value of this monthly.

NUMBER OF MEMBERS.—The members of the horticultural society are to be commended for the result of their efforts in building up the membership this year, which has already reached a total of 1771 members, of which 1651 are annual members and the rest life members. There have been six additions to the life membership roll this year as follows: Thomas Lowry, Minneapolis; F. F. Marshall, Crow River; W. P. Mann, Dodge Center; Ole S. Quammen, Glencoe; C. J. Manner, Anamoose, N. D.; Victor A. Neil, Minneapolis. The membership roll at present stands 387 members ahead of last year at this time.

AN ASSOCIATION OF HORTICULTURAL SOCIETY OFFICERS.—A circular has recently been sent out by the secretary of the Michigan State Horticultural Society asking for opinions as to the advisability of a meeting of the officers of the state horticultural societies of the country to be held at St. Louis in October. It is the thought apparently to make this gathering a permanent organization and to hold regular meetings thereafter to discuss any matters of

general interest to the horticultural societies, such as securing and retaining members, prospects of fruit legislation, etc. A multitude of topics could be considered at such a gathering, which should bring out thought of general value to these organizations.

A MANUAL OF THE PEONY.—Under this title a neat paper bound book of 64 pages has been issued by C. S. Harrison, of York, Neb., who will be pleasantly remembered by those of our society in attendance at the last annual meeting, when he presented before us the subject of the peony. This manual is a very complete treatise on the subject, as set forth in this title, giving cultural directions of varieties, etc.

Over 200 varieties are named and described in it. The last 11 pages are devoted to a consideration of other specially valuable perennial flowers. The writer does not know the price of this manual, but it can be secured by corresponding with Mr. Harrison.

AMERICAN BREEDERS' ASSOCIATION.—An association of this name has recently formed of which Hon. James Wilson, U. S. Sec'y of Agriculture is president and Prof. W. M. Hays, St. Anthony Park, agriculturist at the Minnesota Experiment Station, is secretary. The object of the association is not, as would appear at first thought, for the breeding of live stock alone, but covers instead the whole subject of breeding. In the language of a circular sent out, it is comprised of those "interested in breeding plants and animals or in the study of heredity." This is a large and useful purpose and very practical as well, as the growers of seedling fruits in Minnesota are aware. The society is planning "to publish a directory showing the line of breeding carried on by each breeder of pedigreed animals or plants." A large membership is desired, and all interested in the scientific as well as the practical side of seedling culture should be in line with this association. Annual fee $1.00, which may be remitted to the secretary.

FALL FRUITS FOR THE WORLD'S FAIR.—It is hoped to exhibit at the World's Fair during the fall period, full lines of apples, grapes and plums, possibly pears and peaches if there are any. So far the secretary has not heard of any of the two latter fruits ripening this year. Dear fellow members, what have you that you can contribute to help make this a satisfactory exhibit—one that the state would be proud of? A case of plums or grapes, or a box of apples from each member of the society having an orchard or vineyard in bearing would amply supply all the fruit needed, and we ought to be able to secure enough from so many interested contributors for our purpose. If you have not already corresponded with the secretary in regard to this, will you not do so upon reading this and let him know what varieties you have and when they can be sent?. He will furnish you full directions for gathering and and packing and shipping the fruit, and a recognition of your contributions will be made in some suitable way at the proper time. Of course fruit for this purpose should be extra large of its kind, free from blemish and packed in a way to secure its getting there in the best of condition. Don't think from this that you haven't anything good enough! You have! By selecting the best fruit from your trees any one can do something towards this exhibit. If you have crab apples, don't send them loose, but only on the branch where a good many are clustered together making a fine show. Such a cluster will be very much appreciated. What can you do to help in this splendid exhibit? It is being made as you know under the auspices of the Horticultural Society, and all of the members must feel a common interest in it.

HORTICULTURAL HALL, MINNESOTA STATE FAIR, 1904.

THE MINNESOTA HORTICULTURIST.

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HORTICULTURE AT THE MINNESOTA STATE FAIR, 1904.

A. W. LATHAM, SUPT. HORT.

The horticultural exhibit in connection with the Minnesota state fair just closed was in some respects the most remarkable ever made in the state. When it is considered that the fair was held at an unusually early date and that the season for the ripening of fruit was at least two weeks later than normal, and that under usual conditions the fruit displayed is none too ripe, it is apparent that the horticultural department was badly handicapped in its efforts to make a display up to the usual high standard. In spite of these unfavorable conditions, however, that the display should have been such as to satisfy the management and the throng of visitors and call forth no adverse comment or criticism, is certainly cause for congratulation. It was, of course, anticipated that the fruit display would be a comparatively light one, as exhibitors are exceedingly loth to exhibit unripe fruit, and special efforts were consequently made to decorate and adorn the hall to cover up as fully as possible the anticipated defects, and the results were almost all that could have been desired. Most of the grapes and many of the plums displayed were absolutely green, though they colored up some as the fair progressed; and most varieties of apples were only two-thirds grown and nowhere near in possession of that high color which is so large a factor in the beauty of Minnesota fruits. Even the early ripening sorts, as the Duchess and others of that time of ripening, lacked much of being up to the usual standard, there being a noticeable decrease in size and color below the fruitage of ordinary seasons.

The hall, as usual, was arranged with the floral displays and decorative plants around on the outside of the space occupied by fruits, with hanging baskets from every post and a number of vases of flowers suitably placed in the center of the hall.

An unusually large display of cut flowers was made by amateurs on Monday, and the same space occupied again by the professionals on Thursday, the overflow of this extraordinary exhibit finding a place along the center of the fruit tables, brightening and beautifying the hall in a charming way.

There were three dining table decorations by Minneapolis florists, and these were constantly surrounded by a crowd of admirers of their beauty.

The center of the hall as heretofore was occupied by six long tables containing the fruits on display in this department.

The display of the Jewell Nursery Co., which for a number of years has been the crowning piece of the horticultural department, this year consisted of a windmill some thirty feet high, arranged with a base of graduated shelves containing fresh and canned fruits, the mill itself being veneered with apples and provided with machinery for turning the sails. Our readers will be interested to know that since the fair this mill has been taken down and is being set up in Horticultural Hall at St. Louis as a feature of the Minnesota fruit display. There were three other nursery exhibits in the corners of the hall, by A. A. Bost, Excelsior; Benjamin T. Hoyt, Hamline, and C. P. Nichols, Northfield.

The number of exhibitors was somewhat less than previous years, some of them having lost much of their fruit from the storms that did an especial amount of damage in the Minnetonka region, and others absent from various other causes. The principal exhibitors present were all of them names familiar to our readers, J. A. Howard, W. L. Parker, Dewain Cook, Frank Yahnke, H. H. Heins, and that veteran in this department, Ditus Day. A large number of other exhibitors contributed in a greater or less degree to this display. Of those who might be called regular exhibitors, we noted specially the absence of F. I. Harris, of La Crescent; J. W. Lufkin, who owns the old Somerville orchard, at Viola; F. J. Butterfield, Long Lake, and Wm. Oxford, Freeburg.

Notwithstanding the decrease in the number of exhibitors, the exhibit as a whole in the hall amounted to about the usual maximum number of plates. There were approximately 419

plates of plums, 220 of grapes, 262 of crabs and hybrids, 317 of seedling apples, and enough more of named varieties of apples to bring the total up to 3,538 plates. More than this number could not have been accommodated without using the double decked tables, the use of which is no addition to the general appearance of the hall.

A brief analysis of the fruit display will be of interest to many of our readers. There were four exhibits in the class of sweepstakes collections, varying from fifty-three to seventy-one plates respectively. There were seven exhibits of pecks of Wealthy apples, eleven exhibits of collections of ten varieties of apples, four professional collections of apples, eight amateur collections of apples, twelve collections of crabs and hybrids, five collections of seedling apples, seven collections of seedling crabs and hybrids. There were twenty-three entries for fall varieties of seedling apples and fifteen entries of winter varieties of seedlings and four entries of sweet apple seedlings.

In the class of plums, there were seven entries for sweepstake collections, varying from seventeen to forty-one varieties. There were seven collections of named varieties of plums, and of seedling plums there were four collections entered.

In the class of grapes there were four collections, varying from twenty-seven to forty-five plates. Besides these there were an infinite number of entries of varieties of single plates in all classes of fruit, bringing the total display up to the figures given. The premium list which follows will supplement somewhat the above analysis.

The most interesting exhibit of seedlings, as last year, was made by Mr. T. E. Perkins, who had on display 114 varieties from his seedling orchard at Red Wing. This exhibit almost in its entirety, with the addition of some varieties not mature at the time of the fair, will be shown at St. Louis at the World's Fair the last of September.

Mr. Wyman Elliot as usual judged the plums, and Prof. Green the professional apples, Mr. Clarence Wedge and Wyman Elliot uniting with Prof. Green in judging the seedling apples. Mr. W. L. Parker and Mr. Geo. W. Strand judged the amateur apple exhibits. Mr. A. Brackett judged the grapes. Mr. E. Nagel judged the amateur cut flowers, and Mr. Gust Malmquist, of Minneapolis, the general florist displays.

Among the visitors from abroad especially interested in our art who spent some time in Horticultural Hall during the fair,

were Prof. N. E. Hansen, of South Dakota, E. M. Sherman, of Charles City, Iowa, and Rev. C. S. Harrison, of York, Neb. A large number of members of our society aside from those who were connected with the exhibits were present and spent much time in Horticultural Hall, it being possible at almost any time to get together enough members to hold a good sized horticultural meeting.

In the absence of Mr. Thomas Redpath at St. Louis, where he is spending the season in charge of the Minnesota fruit dis-

Single plate table, Hort. Hall, Minn. State Fair, 1904.

play, Mr. G. W. Strand officiated as assistant in charge of the hall, and to his zeal and fidelity in common with that of other assistants there its successful maintenance is in large part due.

It must not be forgotten that the decorations in the hall, which were unique, beautiful and elaborate beyond any previous effort in this direction, were put up under charge of Mr. Wyman Elliot. Festoons of evergreen rope, with spirals of evergreen around the posts, and clusters of evergreen sprays on the girders and along the outside walls made up a decoration that, contrasting vividly with the whiteness of the interior, was most pleasing.

PREMIUMS AWARDED ON FRUITS AND FLOWERS AT THE 1904 MINNESOTA STATE FAIR.

APPLES. PROFESSIONAL.

PROF. S. B. GREEN, Judge.

Sweepstakes Collection—

J. A. Howard, Hammond	$17.90
W. L. Parker, Farmington	15.20
Frank Yahnke, Winona	14.35
C. C. Hunter, Minneapolis	12.55

Collection (hybrids and crabs excepted)—

J. A. Howard, Hammond	$22.70
Frank Yahnke, Winona	18.20
Dewain Cook, Jeffers	18.20
W. L. Parker, Farmington	15.90

GEO. W. STRAND, Judge.

Peck of Wealthy Apples—

J. A. Howard, Hammond	$ 3.15
C. E. Older, Luverne	3.00
A. D. Leach, Excelsior	2.85
P. H. Perry, Excelsior	2.85
A. A. Bost, Excelsior	2.85
Frank Yahnke, Winona	2.75
Gust. Johnson, Excelsior	2.55

Collection—10 varieties of apples (crabs and hybrids excepted)—

Frank Yahnke, Winona	$ 3.15
J. A. Howard, Hammond	3.15
P. H. Perry, Excelsior	3.00
A. D. Leach, Excelsior	2.80
Dewain Cook, Jeffers	2.80
C. E. Older, Luverne	2.80
J. R. Cummins, Eden Prairie	2.65
A. B. Lyman, Excelsior	2.65
L. Rowell, Farmington	2.50
H. H. Heins, Jordan	2.35
Ditus Day, Farmington	2.15

SINGLE PLATES.

PROF. S. B. GREEN, Judge.

	1st Prem.	2nd Prem.	3rd Prem.
Anisim—			
W. S. Higbie	$1.00		
J. A. Howard		$0.75	
E. G. Ernestvedt			$0.50
Anis—			
W. L. Parker	1.00		
Antonovka—			
Dewain Cook	1.00		
A. B. Lyman		.75	
W. L. Parker			.50
Ben Davis—			
Frank Yahnke	1.00		
Brett—			
W. L. Parker	1.00		
Borovinca—			
J. A. Howard	1.00		
Dewain Cook		.75	
W. L. Parker			.50
Cross—			
Dewain Cook	1.00		
A. B. Lyman		.75	
W. L. Parker			.50
Charlamoff—			
A. B. Lyman	1.00		
W. S. Higbie		.75	
J. A. Howard			.50
Fameuse—			
Frank Yahnke	1.00		
Gideon—			
G. A. Anderson	1.00		
J. A. Howard		.75	
W. L. Parker			.50
Christmas—			
A. B. Lyman	1.00		
Giant Swaar—			
J. A. Howard	1.00		
Gilbert—			
J. A. Howard	1.00		
Golden Russet—			
Frank Yahnke	1.00		
J. A. Howard		.75	

	1st Prem.	2nd Prem.	3rd Prem.
Grundy—			
J. A. Howard	1.00		
Haas—			
J. A. Howard	1.00		
W. L. Parker		.75	
Iowa Beauty—			
C. P. Nicols	1.00		
C. E. Older		.75	
W. L. Parker			.50
Jewell's Winter—			
J. A. Howard	1.00		
Judson—			
J. A. Howard	1.00		
W. L. Parker		.75	
Kaump—			
J. A. Howard	1.00		
W. L. Parker		.75	
A. B. Lyman			.50
Lowland Raspberry—			
A. B. Lyman	1.00		
W. L. Parker		.75	
Longfield—			
J. A. Howard	1.00		
C. P. Nichols		.75	
W. S. Higbie			.50
Malinda—			
J. A. Howard	1.00		
C. P. Nichols		.75	
Frank Yahnke			.50
McMahon White—			
J. A. Howard	1.00		
Frank Yahnke		.75	
W. L. Parker			.50
Newell's—			
J. A. Howard	1.00		
Northwestern Greening—			
J. A. Howard	1.00		
Frank Yahnke		.75	
A. B. Lyman			.50
Peter—			
J. A. Howard	1.00		
Frank Yahnke		.75	
C. E. Older			.50
Plumb's Cider—			
J. A. Howard	1.00		
Frank Yahnke		.75	
W. L. Parker			.50
Rollin's Prolific—			
J. A. Howard	1.00		
Repka Malenka—			
W. L. Parker	1.00		
J. A. Howard		.75	
St. Lawrence—			
W. L. Parker	1.00		
J. A. Howard		.75	
Scott's Winter—			
W. L. Parker	1.00		
J. A. Howard		.75	
Tetofsky—			
C. E. Older	1.00		
J. A. Howard		.75	
W. L. Parker			.50
Utter—			
Frank Yahnke	1.00		
J. A. Howard		.75	
A. B. Lyman			.50
University—			
A. B. Lyman	1.00		
W. L. Parker		.75	
J. A. Howard			.50
Wolf River—			
C. P. Nichols	1.00		
W. L. Parker		.75	
J. A. Howard			.50
White Pigeon—			
J. A. Howard	1.00		
Walbridge—			
G. A. Anderson	1.00		
Frank Yahnke		.75	
J. A. Howard			.50
Yahnke—			
Frank Yahnke	1.00		

	1st Prem.	2nd Prem.	3rd Prem.
Yellow Sweet—			
A. B. Lyman	1.00		
Dewain Cook		.75	
C. E. Older			.50
Yellow Transparent—			
C. A. Anderson	1.00		
A. B. Lyman		.75	
Dewain Cook			.50

Duchess—	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th Prem.	6th Prem.
J. A. Howard	$1.75					
G. A. Anderson		$1.50				
C. E. Older			$1.25			
E. G. Ernestvedt				$1.00		
Frank Yahnke					$0.75	
A. B. Lyman						$0.50
Hilbernal—						
J. A. Howard	1.75					
Frank Yahnke		1.50				
A. B. Lyman			1.25			
G. A. Anderson				1.00		
C. P. Nichols					.75	
C. E. Older						.50

Okabena—	1st	2nd	3rd	4th
J. A. Howard	$1.75			
A. B. Lyman		$1.50		
W. L. Parker			$1.25	
C. E. Older				$1.00

Patten's Greening—	1st	2nd	3rd	4th	5th
W. S. Higbie	$1.75				
J. A. Howard		$1.50			
W. L. Parker			$1.25		
C. P. Nichols				$1.00	
C. E. Older					$0.75

Peerless—	1st	2nd	3rd
J. A. Howard	$1.75		
C. P. Nichols		$1.50	
A. B. Lyman			$1.25

Wealthy—	1st	2nd	3rd	4th	5th	6th
J. A. Howard	$1.75					
E. G. Ernestvedt		$1.50				
C. E. Older			$1.25			
G. A. Anderson				$1.00		
Frank Yahnke					$0.75	
A. B. Lyman						$0.50

APPLES FOR AMATEURS.

W. L. PARKER, GEO. W. STRAND, Judges.

Collection (hybrids and crabs excepted)—	
H. H. Heins, Jordan	$12.10
A. D. Leach, Excelsior	10.85
A. B. Lyman, Excelsior	10.25
P. H. Perry, Excelsior	9.20
Ditus Day, Farmington	9.10
Anton Wilwerding, Freeport	8.40
D. F. Akin, Farmington	7.85
Jno. R. Cummins, Eden Prairie	7.25

SINGLE PLATES.

	1st Prem.	2nd Prem.	3rd Prem.
Anis—			
M. Dewitt, Hammond, Minn	$1.00		
A. Mitchell, Hammond, Minn		$0.75	
Anisim—			
A. D. Leach, Excelsior, Minn	1.00		
Gust. Johnson, Excelsior, Minn		.75	
H. H. Heins, Jordan, Minn			.50
Antonovka—			
H. H. Heins	1.00		
Brett—			
P. H. Perry, Excelsior	1.00		
Jos. S. Sewell, Jr., St. Paul		.75	
A. Mitchell			.50

	1st Prem.	2nd Prem.	3rd Prem.
Borovinca—			
F. Zuercher, Excelsior	1.00		
Gust Johnson		.75	
Mrs. S. R. Spates, Wayzata			.50
Charlamoff—			
Jno. R. Cummins, Eden Prairie	1.00		
L. Rowell, Farmington		.75	
D. F. Akin, Farmington			.50
Fameuse—			
Ditus Day, Farmington	1.00		
D. F. Akin, Farmington		.75	
Giant Swaar—			
M. Dewitt	1.00		
A. Mitchell		.75	
Gilbert—			
A. D. Leach	1.00		
M. Dewitt		.75	
A. Mitchell			.50
Golden Russet—			
L. Rowell	1.00		
D. F. Akin		.75	
M. Dewitt			.50
Grundy—			
M. Dewitt	1.00		
A. Mitchell		.75	
Haas—			
Ditus Day	1.00		
A. D. Leach		.75	
D. F. Akin			.50
Iowa Beauty—			
H. H. Heins	1.00		
D. T. Wheaton		.75	
M. Dewitt			.50
Jewell's Winter—			
M. Dewitt	1.00		
A. Mitchell		.75	
H. F. Busse			.50
Kaump—			
A. Mitchell	1.00		
M. Dewitt		.75	
Lowland Raspberry—			
Ditus Day	1.00		
D. F. Akin		.75	
Longfield—			
A. Mitchell	1.00		
P. H. Perry		.75	
F. Zuercher			.50
Malinda—			
M. Dewitt	1.00		
A. Mitchell		.75	
H. H. Heins			.50
McMahon's White—			
Gust. Johnson	1.00		
Ditus Day		.75	
A. Mitchell			.50
Newell's—			
A. Mitchell	1.00		
M. Dewitt		.75	
Northwestern Greening—			
P. H. Perry	1.00		
A. D. Leach		.75	
A. Mitchell			.50
Peter—			
H. H. Heins	1.00		
P. H. Perry		.75	
M. Dewitt			.50
Peach—			
Ditus Day	1.00		
M. Dewitt		.75	
Plumb's Cider—			
L. Rowell	1.00		
M. Dewitt		.75	
Rollin's Prolific—			
A. Mitchell	1.00		
M. Dewitt		.75	
L. Rowell			.50
Repka Malenka—			
Gust. Johnson	1.00		
A. Mitchell		.75	
M. Dewitt			.50
Scott's Winter—			
M. Dewitt	1.00		
A Mitchell		.75	

	1st Prem.	2nd Prem.	3rd Prem.
St. Lawrence—			
L. Rowell	1.00		
Ditus Day		.75	
M. Dewitt			.50
Tetofsky—			
A. D. Leach	1.00		
M. Dewitt		.75	
Ditus Day			.50
University—			
F. Zuercher	1.00		
H. H. Whitmore		.75	
A. D. Leach			.50
Wolf River—			
H. H. Heins	1.00		
P. H. Perry		.75	
F. Zuercher			.50
White Pigeon—			
M. Dewitt	1.00		
A. Mitchell		.75	
Walbridge—			
M. Dewitt	1.00		
A. Mitchell		.75	
Yellow Sweet—			
Jno. R. Cummins	1.00		
Yellow Transparent—			
P. H. Perry	1.00		
F. Zuercher		.75	
D. F. Akin			.50

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th Prem.	6th Prem.
Duchess—						
P. H. Perry	$1.75					
H. H. Heins		$1.50				
L. Rowell			$1.25			
Mrs. S. R. Spates				$1.00		
A. Brackett					$0.75	
A. A. Bost						$0.50
Hibernal—						
H. H. Heins	1.75					
H. H. Whitmore		1.50				
H. F. Busse			1.25			
A. D. Leach				1.00		
F. F. Farrar					.75	
P. H. Perry						.50
Okabena—						
H. H. Heins	1.75					
F. F. Farrar		1.50				
P. H. Perry			1.25			
M. Dewitt				1.00		
A. Mitchell					.75	
H. F. Busse						.50
Patten's Greening—						
F. Zuercher	1.75					
P. H. Perry		1.50				
H. H. Whitmore			1.25			
Mrs. S. R. Spates				1.00		
H. H. Heins					.75	
A. D. Leach						.50
Peerless—						
C. L. McNelly	1.75					
H. H. Heins		1.50				
M. Dewitt			1.25			
A. Mitchell				1.00		
Mrs. S. R. Spates					.75	
A. D. Leach						.50
Wealthy—						
A. Brackett	1.75					
H. H. Heins		1.50				
H. H. Whitmore			1.25			
H. F. Busse				1.00		
A. Mitchell					.75	
F. Zuercher						.50

CRABS AND HYBRIDS.

Collection, not to exceed ten or less than six varieties.

GEO. W. STRAND, Judge.

W. L. Parker, Farmington	$2.70
J. A. Howard, Hammond	2.70
H. H. Heins, Jordan	2.70
A. D. Leach, Excelsior	2.65
Frank Yahnke, Winona	2.65
P. H. Perry, Excelsior	2.65

C. E. Older, Luverne	2.65
H. H. Whitmore, Excelsior	2.65
A. B. Lyman, Excelsior	2.50
L. Rowell, Farmington	2.40
Ditus Day, Farmington	2.25
H. F. Busse, Sta. A, Minneapolis	1.50

SINGLE PLATES.

	1st Prem.	2nd Prem.	3rd Prem.
Dartt—			
H. H. Heins	$1.00		
J. A. Howard		$0.75	
A. D. Leach			$0.50
Early Strawberry—			
H. H. Heins	1.00		
H. H. Whitmore		.75	
J. A. Howard			.50
Florence—			
Frank Yahnke	1.00		
C. P. Nichols		.75	
P. H. Perry			.50
Gideon's No. 6—			
W. L. Parker	1.00		
General Grant—			
J. A. Howard	1.00		
A. Mitchell		.75	
M. Dewitt			.50
Hyslop—			
A. D. Leach	1.00		
D. F. Akin		.75	
J. A. Howard			.50
Lyman's Prolific—			
H. F. Busse	1.00		
F. Zuercher		.75	
H. H. Whitmore			.50
Martha—			
P. H. Perry	1.00		
Ditus Day		.75	
A. D. Leach			.50
Minnesota—			
H. H. Heins	1.00		
J. A. Howard		.75	
L. Rowell			.50
Meader's Winter—			
L. Rowell	1.00		
J. A. Howard		.75	
Orange—			
H. F. Busse	1.00		
D. T. Wheaton		.75	
Pickett's—			
J. A. Howard	1.00		
M. Dewitt		.75	
A. Mitchell			.50
Shields—			
A. D. Leach	1.00		
H. F. Busse		.75	
P. H. Perry			.50
Sweet Russet—			
J. A. Howard	1.00		
Mrs. S. R. Spates		.75	
A. D. Leach			.50
Tonka—			
H. H. Heins	1.00		
D. T. Wheaton		.75	
Transcendent—			
H. H. Whitmore	1.00		
Adam Bohland		.75	
H. H. Heins			.50
Virginia—			
P. H. Perry	1.00		
J. A. Howard		.75	
W. L. Parker			.50
Whitney—			
A. A. Bost	1.00		
J. A. Howard		.75	
Frank Yahnke			.50

SEEDLING APPLES.

(Open to all.)

PROF. SAMUEL B. GREEN,
WYMAN ELLIOT,
CLARENCE WEDGE,
Judges.

Collection, excluding crabs and hybrids—
T. E. Perkins, Red Wing.....$11.10
A. B. Lyman, Excelsior..... 6.70
W. L. Parker, Farmington..... 5.55
D. F. Akin, Farmington..... 5.55
Ditus Day, Farmington..... 1.10
Collections of crabs and hybrids—
Jno. R. Cummins, Eden Prairie..... $3.15
A. B. Lyman, Excelsior..... 2.75
C. E. Older, Luverne..... 2.25
D. C. Hazelton, Cutler..... 1.90
Ditus Day, Farmington..... 1.90
D. F. Akin, Farmington..... 1.60
J. A. Howard, Hammond..... 1.45

SINGLE PLATES.

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
Fall variety, not sweet, never having received a premium at Minnesota state fair—				
T. E. Perkins, Red Wing, Minn	$6.00			
T. E. Perkins, Red Wing, Minn		$4.00		
T. E. Perkins, Red Wing, Minn			$2.00	
Frank Yahnke, Winona, Minn				$1.00
Fall variety, not sweet (open to all)—				
T. E. Perkins	6.00			
T. E. Perkins		4.00		
T. E. Perkins			2.00	
T. E. Perkins				1.00
Winter variety (not sweet, never having received a premium at the Minnesota state fair)—				
T. E. Perkins	10.00			
T. E. Perkins		8.00		
T. E. Perkins			4.00	
T. E. Perkins				2.00
Winter variety, open to all—				
T. E. Perkins	10.00			
T. E. Perkins		8.00		
A. B. Lyman			4.00	
A. B. Lyman				2.00

Sweet variety—

	1st Prem.	2nd Prem.	3rd Prem.
T. E. Perkins	$6.00		
D. F. Akin		$4.00	
T. E. Perkins			$2.00

PLUMS.

(Open to all.)

WYMAN ELLIOT, Judge.

Sweepstakes collection—
Dewain Cook, Jeffers.....$5.05
Jno. R. Cummins, Eden Prairie..... 4.80
Frank Yahnke, Winona..... 4.55
C. E. Older, Luverne..... 4.25
C. C. Hunter, Minneapolis..... 3.95
J. A. Howard, Hammond..... 3.70
P. H. Perry, Excelsior..... 3.70
Collection, not to exceed fifteen, named varieties fruit of early ripening varieties—
Dewain Cook, Jeffers.....$4.30
Frank Yahnke Winona..... 4.10
C. E. Older, Luverne..... 3.80
P. H. Perry, Excelsior..... 3.55
H. F. Busse, Minneapolis..... 3.30
J. A. Howard, Hammond..... 3.10
Gust Johnson, Excelsior..... 2.85

SINGLE PLATES.

	1st Prem.	2nd Prem.	3d Prem.
Aitkin—			
J. A. Howard	$1.00		
H. F. Busse		$0.75	
D. C. Hazelton			.50
Black Hawk—			
Dewain Cook	1.00		
Cheney—			
E. G. Ernestvedt	1.00		
Mrs. J. V. Bailey		.75	
Frank Yahnke			.50
De Soto—			
Gust Johnson	1.00		
A. A. Bost		.75	
Jno. R. Cummins			.50

	1st Prem.	2nd Prem.	3rd Prem.
American Eagle—			
Dewain Cook	1.00		
Forest Garden—			
Mrs. S. R. Spates	1.00		
Frank Yahnke		.75	
A. A. Bost			.50
Hawkeye—			
Frank Yahnke	1.00		
J. A. Howard		.75	
New Ulm—			
Gust Johnson	1.00		
Dewain Cook		.75	
Ocheeda—			
H. F. Busse	1.00		
Dewain Cook		.75	
H. H. Heins			.50
Rockford—			
Dewain Cook	1.00		
Gust Johnson		.75	
Rollingstone—			
J. A. Howard	1.00		
A. A. Bost		.75	
Dewain Cook			.50
Stoddard—			
J. A. Howard	1.00		
A. A. Bost		.75	
Dewain Cook			.50
Surprise—			
W. S. Higbie	1.00		
H. F. Busse		.75	
Frank Yahnke			.50
Weaver—			
H. H. Heins	1.00		
Gust Johnson		.75	
H. F. Busse			.50
Wolf, Freestone—			
Dewain Cook	1.00		
Gust Johnson		.75	
H. F. Busse			.50
Wolf, Clingstone—			
Frank Yahnke	1.00		
Dewain Cook		.75	
J. A. Howard			.50
Wyant—			
Frank Yahnke	1.00		
Dewain Cook		.75	
W. S. Higbie			.50
Peaches—			
A. D. Leach	1.00		
Compass cherry—			
H. F. Busse	1.00		
A. D. Leach		.75	

SEEDLING PLUMS.

WYMAN ELLIOT, Judge.

Collection of seedlings—	
Dewain Cook	$8.10
J. A. Howard	6.00
Louis J. Bedney, Bradley Sta	4.70
Hamline Poore, Bird Island	3.55
D. F. Akin, Farmington	2.65
One-half peck—	
Dewain Cook	$3.70
Louis J. Bedney	3.25
J. A. Howard	3.05

Seedling to equal or excell De Soto, never having received a premium of the Minnesota state fair.

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
Dewain Cook	$5.00			
A. W. Keays		$4.00		
Louis J. Bedney			$3.00	
C. E. Older				$2.00

GRAPES.

A. BRACKETT, Judge.

Collection, not less than 10 varieties—	
Gust Johnson, Excelsior	$21.50
P. H. Perry, Excelsior	15.00
A. A. Bost, Excelsior	13.00
Mrs. Isabella Barton, Excelsior	10.50

	1st Prem.	2nd Prem.	3rd Prem.
Agawam (Roger's No. 15)—			
Gust Johnson	$1.50		
A. A. Bost		$1.00	
R. A. Sodergren			$0.50
Aminina (Roger's No. 30)—			
Gust Johnson	1.50		
Barry (Roger's No. 43)—			
Gust Johnson	1.50		
Brighton—			
Gust Johnson	1.50		
A. A. Bost		1.00	
Concord—			
Gust Johnson	1.50		
Chas. A. Giesman		1.00	
A. A. Bost			.50
Cottage—			
Gust Johnson	1.50		
A. A. Bost		1.00	
Campbell's Early—			
A. A. Bost	1.50		
R. A. Sodergren		1.00	
P. H. Perry			.50
Delaware—			
Gust Johnson	1.50		
Chas. A. Giesman		1.00	
A. A. Bost			.50
Duchess—			
Gust Johnson	1.50		
Early Victor—			
Gust Johnson	1.50		
Eldorado—			
Mrs. Isabella Barton	1.50		
Empire State—			
Mrs. Isabella Barton	1.50		
Gust Johnson	1.00		
Green Mountain—			
A. A. Bost	1.50		
Mrs. Isabella Barton		1.00	
Herbert (Roger's No. 44)—			
Gust Johnson	1.50		
Iona—			
A. A. Bost	1.50		
Gust Johnson		1.00	
P. H. Perry			.50
Janesville—			
A. A. Bost	1.50		
P. H. Perry		1.00	
R. A. Sodergren			.50
Lindley (Roger's No. 9)—			
Gust Johnson	1.50		
P. H. Perry		1.00	
A. A. Bost			.50
Lady—			
Gust Johnson	1.50		
P. H. Perry		1.00	
A. A. Bost			.50
Martha—			
Gust Johnson	1.50		
A. A. Bost		1.00	
Massasoit (Roger's No. 3)—			
Gust Johnson	1.50		
P. H. Perry		1.00	
A. A. Bost			.50
Moore's Diamond—			
A. A. Bost	1.50		
Gust Johnson		1.00	
R. A. Sodergren			.50
Moore's Early—			
A. A. Bost	1.50		
Gust Johnson		1.00	
P. H. Perry			.50
Niagara—			
Gust Johnson	1.50		
Mrs. Isabella Barton		1.00	
R. A. Sodergren			.50
Pocklington—			
Gust Johnson	1.50		
A. A. Bost		1.00	
Mrs. Isabella Barton			.50
Pokeepsie Red—			
Gust Johnson	1.50		
Mrs. Isabella Barton		1.00	
Telegraph—			

	1st Prem.	2nd Prem.	3rd Prem.
Gust Johnson	1.50		
Mrs. Isabella Barton		1.00	
Wilder—			
Gust Johnson	1.50		
Woodruff Red—			
Gust Johnson	1.50		
Mrs. Isabella Barton		1.00	
Worden—			
Gust Johnson	1.50		
A. A. Bost		1.00	
P. H. Perry			.50
Wyoming Red—			
Gust Johnson	1.50		
Seedling grape—			
E. G. Ernestvedt, Belview	1.50		

PLANTS, PROFESSIONALS.

GUST. MALMQUIST, Judge.

Collections of foliage and decoration plants—	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
Minneapolis Floral Co., Minneapolis, Minn	$35.00			
R. J. Mendenhall, Minneapolis, Minn		$30.00		
E. Nagel & Son, Minneapolis, Minn			$20.00	
John Vasatka, Minneapolis, Minn				$15.00
Collection greenhouse plants—				
R. J. Mendenhall	20.00			
Minneapolis Floral Co		15.00		
E. Nagel & Son			10.00	
John Vasatka				5.00
Collections of five hanging baskets—one of a kind—				
E. Nagel & Son	5.00			
Minneapolis Floral Co		4.00		
John Vasatka			3.00	
Collections of coleus—				
E. Nagel & Son	2.00			
John Vasatka		1.00		
Minneapolis Floral Co			.50	
Group of palms in pot—				
R. J. Mendenhall	4.00			
Minneapolis Floral Co		3.00		
E. Nagel & Son			2.00	
John Vasatka				1.00
Single specimen palm—one in pot—				
John Vasatka	4.00			
R. J. Mendenhall		3.00		
Minneapolis Floral Co			2.00	
E. Nagel & Son				1.00
Single specimen fern—one in pot—				
John Vasatka	4.00			
Minneapolis Floral Co		3.00		
E. Nagel & Son			2.00	
Mrs. Jas. M. Drew, St. Anthony Park, Minn				1.00
Collection of geraniums in bloom—				
John Vasatka	4.00			
E. Nagel & Son		3.00		
R. J. Mendenhall			2.00	
Collection of carnations in bloom—				
E. Nagel & Son	3.00			
John Vasatka		2.00		
Vase filled with plants—				
E. Nagel & Son	4.00			
John Vasatka		3.00		
Minneapolis Floral Co			2.00	
R. J. Mendenhall				1.00

CUT FLOWERS.

(Open to all.)

	1st Prem.	2nd Prem.	3rd Perm.
Collection of dahlias—			
F. F. Farrar, White Bear Lake, Minn	$3.00		
Mrs. Krause, Rose Farm, St. Paul, Minn		$2.00	
Daniel Ganzer, Merriam Park, Minn			$1.00
Collection of sweet peas—			
Mrs. R. A. Cass, Minneapolis, Minn	3.00		
Mrs. J. H. Swart, Minneapolis, Minn		2.00	
Mrs. J. V. Bailey, Sr., Newport, Minn			1.00
Collection of asters—			
Mrs. Krause	3.00		
Alfred Loeffel, Merriam Park, Minn		2.00	
E. Nagel & Son			1.00

	1st Prem.	2nd Prem.	3rd Prem.
Collection of carnations—			
Minneapolis Floral Co	3.00		
E. Nagel & Son		2.00	
Jno. Vasatka			1.00
Collection of roses—			
Minneapolis Floral Co	3.00		
E. Nagel & Son		2.00	
John Vasatka			1.00
Collection of gladioli—			
F. F. Farrar	2.00		
E. Nagel & Son		1.00	
John Vasatka			.50

DESIGNS, BASKETS AND BOUQUETS.

Table decoration—	1st Prem.	2nd Prem.	3rd Prem.
Minneapolis Floral Co	$30.00		
E. Nagel & Co		$25.00	
Jno. Vasatka			$20.00
Twelve-inch basket of flowers—			
Minneapolis Floral Co	5.00		
Jno. Vasatka		3.00	
E. Nagel & Son			2.00
Table bouquet—			
Jno. Vasatka	3.00		
E. Nagel & Son		2.00	
Minneapolis Floral Co			1.00
Hand bouquet—			
Minneapolis Floral Co	3.00		
E. Nagel & Son		2.00	
John Vasatka			1.00
Bridal bouquet—white flowers—			
E. Nagel & Son	3.00		
Minneapolis Floral Co		2.00	
John Vasatka			1.00

CUT FLOWERS.
(For amateurs.)

E. NAGEL, Judge.

Collection of asters—	1st Prem.	2nd Prem.	3rd Perm.
Mrs. F. H. Gibbs, Merriam Park	$2.00		
Mrs. Krause, Rose Farm, St. Paul, Minn		$1.00	
Mrs. E. O'Reilley, 412 Wheaton Ave., Merriam Park			$0.50
Collection of coreopsis—			
Mrs. F. H. Gibbs	2.00		
Geo. A. Kersten, 3108 Colfax Ave. S., Minneapolis		1.00	
Mrs. M. K. Bond, 3138 Clinton Ave., Minneapolis			.50
Collection of Dahlias—			
F. F. Farrar, White Bear Lake	2.00		
Mrs. F. H. Gibbs		1.00	
Geo. A. Kersten			.50
Collection of everlasting flowers—			
Mrs. Krause	2.00		
Mrs. F. H. Gibbs		1.00	
Daniel Gantzer, Merriam Park			.50
Collection of gladioli—			
F. F. Farrar	2.00		
C. M. Hoag, 1818 Chestnut St., Minneapolis		1.00	
Mrs. F. H. Gibbs			.50
Collection of nasturtiums—			
Mrs. A. A. Brown, 3129 3rd Ave. So., Minneapolis	2.00		
Mrs. M. K. Bond		1.00	
Mrs. Krause			.50
Collection of marguerite carnations—			
Mrs. F. H. Gibbs	2.00		
Mrs. Krause		1.00	
Collection of pansies—			
Mrs. Krause	2.00		
Mrs. F. H. Gibbs		1.00	
J. M. Schurff, 1413 Albany St., N. Hamline			.50
Collection of verbenas—			
Mrs. F. H. Gibbs	2.00		
Daniel Gantzer, Merriam Park		1.00	
Mrs. Krause			.50
Collection of zinnias—			
Mrs. E. O'Reilly	2.00		
Mrs. Krause		1.00	
Mrs. F. H. Gibbs			.50

GROWING PEACHES ON THE PRAIRIE.

HENRY DUNSMORE, OLIVIA.

Although we can hardly say Minnesota is in the peach belt, yet there are some fruits grown in the state that are raised with less pleasure and profit to the grower than the hardiest peaches. About eight years ago I planted twelve peach trees, four each of Elberta, Champion and Bokhara No. 3. All of them made a very good growth the first two years. The third winter killed two Champion and three Elberta.

In 1900 I built a new residence and in the rush the peach trees were left entirely without protection all winter. The Bokhara came through the winter without serious injury, only the tops of the new wood being blackened, and they bore a few peaches the following season. The Elberta and Champion were killed to the ground and, I might say, below the ground, for the roots were killed also, thus proving to my satisfaction at least that the Bokhara could stand a lower temperature then either Champion or Elberta.

The past season my trees bore a good crop of peaches ranging in size from one and a half to two inches in diameter. From three trees I gathered about three bushels of fruit, making my third crop in succession.

The peach can stand a lower temperature than is generally supposed, provided it is in a sheltered location; but if exposed to the full blast of the northwest wind an ordinary winter would probably finish it. The peach buds cannot stand an extremely low temperature, like the apple and plum, yet, strange as it may seem, when the blooming period arrives they seem to change places in the classification of hardiness. From observations during the past four years, I have noticed that the peach blossom in the same stage of development can stand a lower temperature than the plum. In 1902 a great many of the plum blossoms were injured by too much rain and frost, while the peach blossoms showed no injury. I speak of one variety of the peach only, Bokhara No. 3.

I have grown a number of peach trees on native plum roots, and think this makes the most desirable tree for Minnesota. They should be grafted and not budded, for the same reason that it is desirable to have the apple on hardy roots. When grown in this form if the treetop should be killed by severe freezing the chances are that the following spring it would send up a shoot from above the graft and would form fruit-buds the same season. The trees when small can be laid down for winter much easier than when grown on the large, ash-like roots of the peach.

I have grown a few seedlings from pits of fruit grown on my own trees, hoping in this way to gain a point by environment and probably in hardiness. My trees have always had a slight protection in winter except the one which I have already mentioned.

The time has not yet arrived when Minnesota can grow peaches commercially, but I see no reason why any one who wishes to grow a few peaches cannot have them much easier than grapes in the prairie regions. Given the same care that grapes require, you will get some fruit for your labor. The largest returns I ever got from grapes on the prairie was disappointment. A common mistake with many who have tried peach trees and failed is in keeping the trees covered until late in the spring for the purpose of avoiding late frosts. In this way you may raise peach trees but very little fruit. There is nothing to fear from spring frosts. It is only the extreme cold in winter that has to be guarded against. The peach buds must have light and air whenever they begin to swell, otherwise they will not set fruit, or if they do they will be abortive.

In this state the peach is grown at a disadvantage compared with the apple, yet it has qualities that the apple does not possess. Put on a two-year-old plum root, it will fruit at two years old, on any other kind of root usually at three years, and when the fruit is properly set nothing short of a cyclone will shake it from the tree. During the last two years we had a number of terrific wind storms that scattered apples and plums in every direction, yet the peach trees never lost a fruit. I am aware of the fact that a great many persons are of the opinion that this delicate fruit cannot be raised in Minnesota and may have an idea that this is booming the peach for the purpose of selling a few trees. For the benefit of all doubting Thomases I will say that I have not any to sell.

NICE MIXED FLOWER BEDS that are pretty must be judiciously managed. Plant tall flowers at the back and slope them gradually down to small flowers. By doing this and judiciously matching the colors you can have many nice flowers and an exquisite bed.

QUALITY SELLS THE GOODS.—There is no secret in possessing a good market for anything. Grow the best, put it up in the best manner, give good weight and measure every time. Use clean packages, and then be sure that people know what you have to sell. The markets are rarely ever glutted with the best. The man who tries to see how little he can give for the money or how much inferior stuff he can work into the baskets is the one complaining of poor markets and poor prices.

PRACTICAL METHODS OF DEALING WITH WEEDS IN NURSERY CULTURE.

W. S. HIGBIE, EDEN PRAIRIE.

Nature abhors bare ground as surely as she abhors a vacuum. The Creator in His infinite wisdom has provided that myriads of plants, comprising hundreds of species, should spring up as if by magic wherever the conditions are favorable, to cover the face of the earth. Thus we find some kind of vegetation growing on the greater part of the land surface of the globe. When any of these plants grow to interfere with the plans of mankind, they are termed weeds, and man is wont to look upon them as a curse. The task of combating undesirable plants forms a large part of the work of the agriculturist.

No cast-iron rules should be laid down to govern the actions of one who is engaged in any occupation, and the nursery business is no exception. Each person must work out to a certain extent his own salvation, varying methods to suit conditions.

To obtain the best results the land intended for nursery purposes should be handled, at least one year previous to planting, with a view to killing as many weeds as possible. Growing a crop of corn or potatoes, taking special care to keep them clean, or alternate plowing and harrowing until July 1st, then sowing to buckwheat, will help very materially in cleaning land.

Arrange the nursery so that the rows will be as long as possible, leaving enough space between to allow a horse and cultivator to pass without injuring the stock. In good nursery culture, however, the chief aim is not the destruction of weeds but cultivation that is frequent and thorough enough to maintain a dust mulch, which will conserve the moisture, produce a good growth of the stock and incidentally kill all weeds before they get in sight.

At our place we use the following list of tools: an 8 in. plow for one horse, a harrow tooth cultivator, a five shovel cultivator, hoes, garden rakes and rake hooks. The first implement to be used in the spring is the little plow. By swinging the clevice that is on the end of the beam to one side and inserting a block of wood between it and the beam to hold it in place, we are able to get so close to the nursery rows as to leave only a thin comb of earth standing, which is easily and quickly levelled by using the rake hook. The plowing is immediately followed by the harrow-tooth cultivator with which we are able to keep the ground in good condition until it gets packed by a heavy rain, when the other cultivator mentioned is brought into use.

We plan to cultivate the nursery at least once a week, but alas, the words of Robert Burns—"The best laid plans of mice and men oft gang aglee," and sometimes we are compelled by force of circumstances to face weeds six inches to a foot in height. Then again the little plow is brought into use, weeds are rolled out of sight and cultivation resumed and continued until about the first of October.

LIGHTS AND SHADOWS OF PIONEER FRUIT GROWING.

E. R. POND, BLOOMINGTON.

In the spring of 1844 my father brought some apple seed from Connecticut and planted it on the Minnesota river bluff, about eleven miles south of here. I suppose this was the first attempt to raise apples in Minnesota. About 100 little trees started growing, but of the 100 only two lived to bear fruit, and one of these died without bearing a second time; the other one, at least sprouts from its roots, is living yet and bears fruit every year.

I suppose father planted these seed in about as trying a place as he could have found. They were on a south slope, the hill north and west being high enough to keep off the wind. The garden was enclosed by a picket fence, and the seed was planted about four feet from the fence, so giving a great daily variation of temperature.

Some time during the sixties the tree was transplanted, but it never amounted to anything in the new place, partly because the cattle and sheep were occasionally allowed in the field. About ten years ago my brother dug up one of the most promising sprouts and set it out in his orchard, where it has had some care, and now it is quite a good size and bears apples every year.

About the year 1849 we procured some currant slips or bushes from Oliver Faribault, who then lived at Shakopee. They were the old Red Dutch variety. Those currants did very well and bore bountifully for years. I will say that I never knew what a currant worm was by sight till about the year 1880.

Up to about twenty years ago we always had plenty of wild plums from the side hills and river bottoms, but now they are nearly all gone, and we are raising cultivated plums.

About 1871 I commenced farming for myself and was very anxious to raise fruit enough for our own use, and when a tree agent came around and showed his pictures and samples of fruit I did not know any better than to give him an order. Some of the trees, perhaps, would have been all right except for blight if they had been on hardy roots. I also ordered a Lady grape at $2.50. I took as good care of them as I knew how, but in five or six years they were

all gone. I also bought some Duchess, Woodward's Seedling, Stewart's Sweet, from Amasa Stewart, now of Texas. These trees all died without giving much fruit, not more than two bushels. I was pretty much discouraged about trying to raise apples.

About this time (1885) I commenced trying strawberries and raspberries; then pretty soon I joined the horticultural society and began to find out better ways of caring for the plants and trees. I have made a new start in apple trees, but have not spent much money on them and procure scions and graft them on roots of my own raising, also planting promising seed and saving the best plants.

But now, going back to about the year 1859, father bought a lot of apple and pear trees from an eastern nursery agent. I remember after setting them out in the spring we older children had to carry water up the hill from the spring to water them. They all started to grow, but I do not remember that one of them lived to bear fruit. About the year 1872 he also bought one hundred apple trees. Of these probably not more than a dozen or so ever bore any fruit; four of them, Transcendents, are still alive, but nearly dead with blight. Along through the sixties and into the seventies probably one-tenth, and possibly one-quarter, of those living in our town set out fruit trees. Very few of them amounted to anything, but here and there are a few Transcendents and Siberian crabs still holding out in spite of blight.

Judging from the past, leaving out the last fifteen years, one might be justified in saying "apples would not grow in Minnesota," but I believe we are finding out the reasons of our failures, and I believe we can raise some varieties now that have failed heretofore, by having them on hardy roots. My remembrance of the appearance of the trees when they died would lead me to believe they died in the root first, and then because of that the top had to die.

Among the fruit tree plantings that have come under my observation is one I wish to speak about. About forty-five years ago an elderly man came to our town and bought a small place on one of the highest points of the river bluff, and made a home where he could end his days near his sons. He set out a number of apple trees, some of them on the side hill in the sand and gravel, with very little soil. The tops of these trees nearly all died down to the ground, but most of them sent up sprouts from the roots and have grown like a clump of bushes. Within the last six or eight years a good many of them have commenced bearing, and there are nearly as many different kinds as there are trees. Several are winter apples and some pretty good ones. Here were trees in ground where an

oak would hardly live growing and bearing fruit. Such an object lesson as this I think should encourage apple seed planting, and among the millions that would grow there would probably be an apple that would beat the one that will get the $1,000 premium offered by the Minnesota Horticultural Society.

Mr. E. R. Pond: I have here samples (exhibiting) of the apples grown on the first tree planted in Minnesota. They are a sweet apple. It was perhaps late in May or the first of June when my father arrived there, so they may not have been planted until the following spring.

The President: Is it a good sized tree?

Mr. Pond: This tree we have now is a small tree, probably only two inches in diameter and eight to ten feet high. It is a sprout from the old tree and was set out about ten years ago.

IMPROVEMENT OF SCHOOL GROUNDS.

FRANK H. NUTTER, MINNEAPOLIS.

The "school question" has been a prominent one for years in the pulpit, on the platform and in the press, but it is only recently that we have heard it referred to in a meeting like this; doubtless natural development is being carried out here as it has been in the case of our cemeteries, parks and home grounds, and it is a matter of congratulation that it is tarrying so little behind these other interests in the journey towards the ideal.

The first "district schoolhouse" which I can recall was a small, unattractive building at the intersection of two roads in the New Hampshire hills. Yard there was none; close at hand a big pile of stones picked from the adjoining fields afforded a convenient perch for the quieter scholars at recess time; the carvings of the interior were the work of the boys' jackknives, the colorings and decorations of the exterior the work of the elements.

A disagreeable picture you say? Not entirely so. In the summer the young birches, sweet ferns, wild rasperries and blackberries of the roadside thickets concealed much of the roughness of the surroundings, while a little brook trickling under the roadway was a center of attraction to the little ones. Even in winter the foliage of the young pines added a touch of life to the picture.

Twenty years later another district schoolhouse came under my notice. A party of engineers, engaged in setting the first stakes for what is now one of the thriving young cities of our state, were tramping back to headquarters through several inches of fresh snow and in darkness that confused all landmarks, so that dispute arose as to the direction of home. At last a building loomed up near at hand, which proved to be the schoolhouse. I can assure you it

was a welcome sight just then, for it enabled us to reconstruct our geography and steer a straight course to our destination, though in the glare of broad daylight it had few attractions. Standing on a little rise in the prairie, which stretched to the horizon on every side,

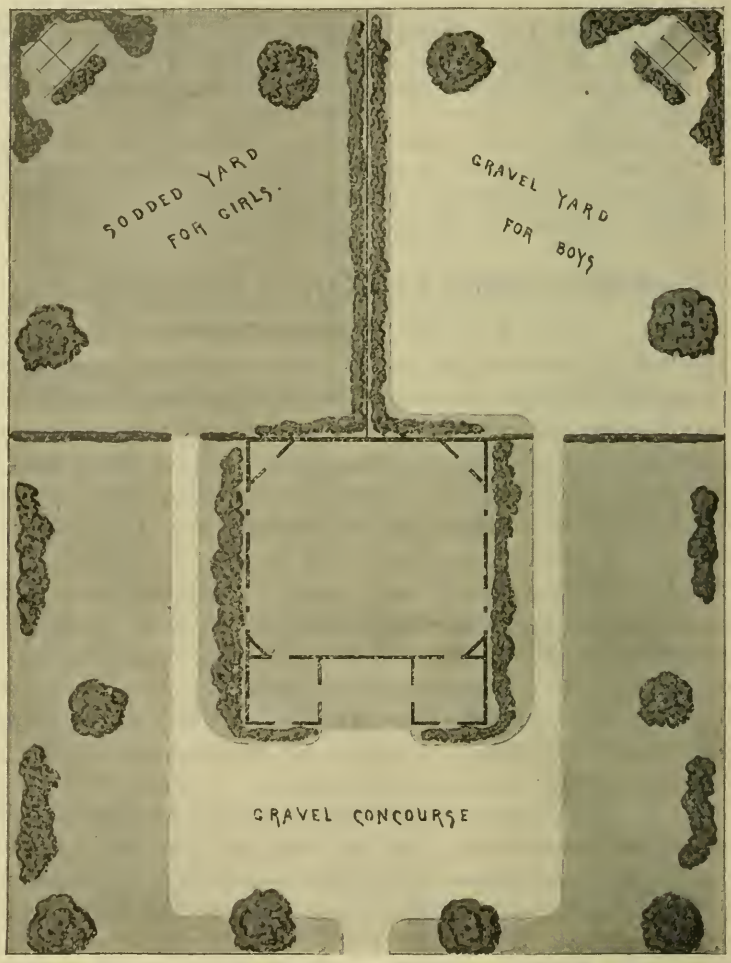

Fig. 1. Improved school grounds.

it was apparently a target for all the blizzards of winter and cyclones of summer. I know not if the building still stands, but I am glad to say that with the settlement of the country, groves and orchards have materially changed the landscape for the better.

However, these two examples are typical of conditions which surround most of our schoolhouses, not only in the country but also

in our villages and cities; for bareness and unkempt environments may curse a costly building of brick and stone as well as some frail structure of frame and clapboards.

How can these things be remedied? First, let us urge more care in the location of the building. While it is necessary to accommodate the people of the district, still a slight variation from the absolute center of the district may give a much better site so far as the health and happiness of the scholars may be concerned. Of course, the selection of a schoolhouse lot is frequently a difficult matter to adjust satisfactorily to all concerned, and too often a tract of land is selected for this purpose because it can be put to no other use.

Again, the schoolhouse lot should be of liberal size, especially on the prairie, so that a grove or shelter belt may be provided, and even in the villages more liberal things may often be accomplished.

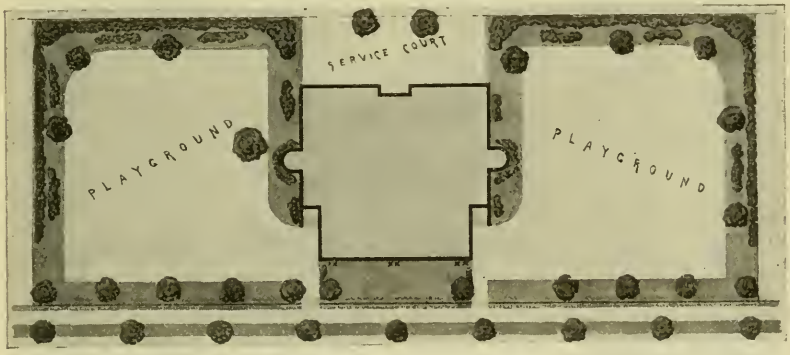

Fig. 2. Improved school grounds.

Among the hoped-for advantages to be derived from the consolidating and centralizing of districts that is now being adopted in some sections of our state may also be that of larger grounds, affording room for school gardens and experimental beds, as well as more extended work in the ornamental line.

When it comes to the planning of the schoolyard the question of room for playgrounds comes at once to the front. Personally I doubt the expediency of providing for much more than a little exercise in the open air during recess time, in the immediate vicinity of the schoolhouse. I believe, however, in the inalienable right of the children to play, and to provide for that would in the village and town urge the authorities to secure suitable playgrounds elsewhere, which under proper supervision should be open for use throughout the year, affording recreation in vacations and on holidays, when the schoolhouse and its yard would be forbidden ground.

The planting which may be done on the school grounds must for reasons of economy be simple and so arranged as to give shade, shelter and necessary privacy at the least expense of first cost and subsequent care, and, if possible, the scholars should be encouraged to take an active part in the work, of course under proper supervision. That this is not impossible is proven by the experience this season at one of the schools in northeast Minneapolis, where the scholars not only worked enthusiastically themselves, but also in-

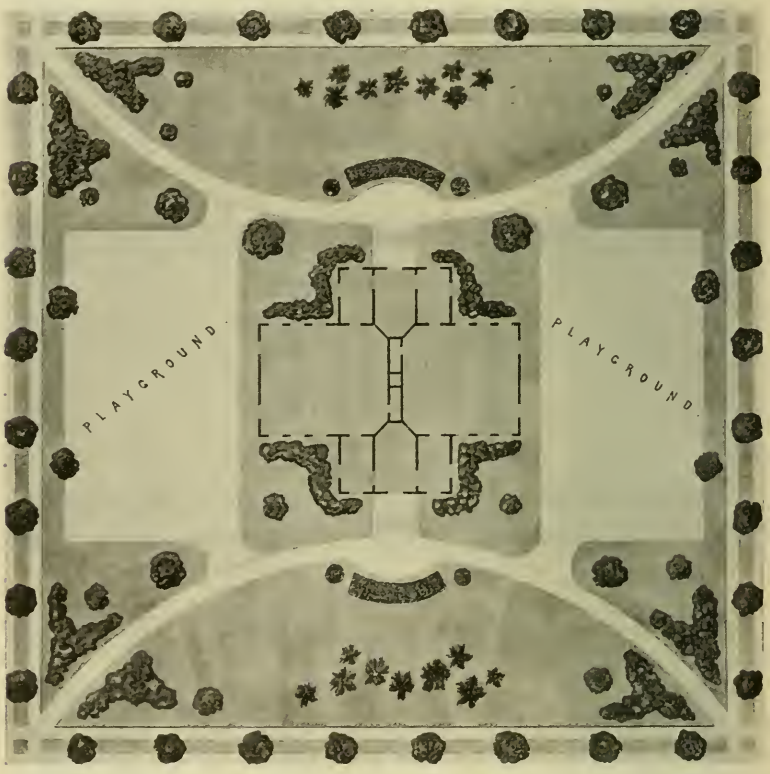

Fig. 3. Improved school grounds.

terested their parents so that they joined in the labor, hauling black dirt for flower beds and lawn. These were not people who took the matter up for sake of the exercise, but they worked at it evenings, after a full day's labor elsewhere.

Even if the young folks make an occasional mistake, it is better to let it pass without too much notice, for it is better to learn by experience rather than to discourage their zeal.

For the planting of trees and shrubs native or common varieties should be generally used, for the results here should be such as to induce the poorest scholar to try to do something similar at home.

I have heard it said that lilacs and such flowering shrubs should not be used on school grounds, as the children will pull them all to pieces to rob them of their blooms; but if they are tempted that way it is certainly a chance to teach them a wholesome lesson of self-restraint. At the East Side school referred to the boys this spring set out a long stretch of lilac hedge, and I venture to say if the occasion demands the lesson will be taught without calling on the principal to exercise her authority, unless it be to keep the peace.

Vines are among the most valuable accessories in ornamental plantings and will be of much help in covering outbuildings or making screen by training on trellises. On the building proper, if of wood, it may be difficult to use them very freely on account of being in the way in painting and, perhaps, rotting the woodwork; but if the building be of brick or stone they are just what we need to cover the bare wall. One of our native varieties of creeper, Engelman's woodbine, from its habit of growth, clinging directly to the masonry without aid of twine or trellis, is of greatest value in this direction.

In addition to simplicity one other thing should characterize the ideal school grounds, and that is neatness, and if the scholars can be led to enforce that, not only in the front yard but in the back, a most important lesson has been taught.

I have made three sketches to illustrate what may be done in the way of simple treatment of school grounds: the first shows the surroundings of a small building in a rural district; the second the grounds of a more pretentious structure occupying a block in some town or village; the last is not entirely imaginary, as it is a plan that has actually been carried out for a city school. In these drawings I have endeavored to carry out the principles before set forth, with what success the reader must judge.

Mr. Chas. M. Loring: I think there should be as little grass on the school ground as possible. The finest playgrounds I ever saw were right in the middle of one of the largest cities in the world. There were trees and shrubs and plenty of shade, and the children were allowed to run all over it, and they enjoyed it. I believe in having all the room possible for them to run and play and romp. I believe in educating children, and if we educate them along these lines when they become the grown people they will carry out the ideas taught them while young. The plans Mr. Nutter has shown are very good, and I think they would be of advantage to those living in smaller towns to copy from. We do not pay enough attention to ornamenting our school grounds, neither in the city nor in the country. A great deal has been done in the city through the influence of the different associations of which Mrs. Barnard spoke, and that work is going on. I have visited a great many of the schools myself, and I feel satisfied that the children are learning

a lesson in this matter of ornamentation that we shall feel and know about in all future generations.

Mr. R. H. Pendergast: I must say that I think, as far as my observation goes, we are ahead of your cities. I do not think there is a place in the state where the ornamentation of school grounds is finer than at Ironwood, on Lake Superior, and it is all owing to the generosity of one of the mining men. They had a yard laid off, and, as Mr. Nutter spoke of, they have shown a good deal of judgment in not putting in many trees. There are some trees there, but the shrubs are there in generous quantities. They are placed in groups mostly, sometimes forty to fifty in a group, mostly of the smaller kind. They have several beds of roses, and I believe, as Mr. Richardson says, that with us up north they are more successful than they are here. In the grounds there are several large beds with from fifty to a hundred bushes, and they show up well. In many places they have vines, and they have them on the building more or less. They have not agreed with Mr. Nutter about the playgrounds. They have very generous playgrounds. They contain croquet grounds, tennis grounds and room for various athletic games, and at the same time the children have free access to all parts of the grounds. I visit there every summer, and I like to see how things are progressing. There is no trouble about the children disturbing anything there. As I have always preached, I want to say now that the beginning is with the children. We have got to educate the children. If the children are educated and grow up and have homes of their own, they will put into practice those things they have learned while they were children, and when they are educated to see the beauty of trees and flowers and shrubs, they will have them at home.

Mr. Morrell: I think the lack of interest in the planting of trees on Arbor Day is very deplorable. In looking about the country we find here and there a schoolhouse with one or two specimens of small, sickly trees, but the majority have absolutely no trees in their yards. There must be some good reason why there are not more trees planted around our schools. One county superintendent said that Arbor Day had been a failure. It seems to me it has been very much so. The fact of the matter is the children go at it in a haphazard way; they have had no instruction in practical tree-planting and in the propagation of trees and shrubs, and, as a consequence, they take very little interest in the matter. It seems to me more interest should be taken by the educators of the state in planting trees and improving school grounds, and there will be no difficulty in doing so if the planting is done with ordinary care.

Prof. Hays: Madam President, Ladies and Gentlemen: I have been greatly interested in the discussion of the school grounds, and I got a very much larger appreciation of the opportunities of the outdoor part of our schools. I have done some experimenting with country school grounds with gardens, and put the work in the hands of others in some cases, people who were employed by me so that I could put some pressure on as to the manner in which they were to take care of the work. The matter of gardens in the school is a

difficult one because of the summer vacation. The fear we had that that would make things difficult was more than justified by the results. Mr. Nutter's general plan of planting trees and shrubs is well proportioned if put in practice on country school grounds, but the phase of the subject that has come up and appealed to me with the widest scope has been the fact that our country schools are organized on a small basis. The teacher is hired temporarily, the tenure of office is short, and it is difficult to carry on the work that needs executive thought and executive administration, and I have come more and more to believe that the solution of the whole problem lies in the consolidation of the rural schools. I visited some of the Ohio schools, and those schools are taught by superintendents and principals who have been educated in small colleges in Ohio. They have no thought of putting in industrial work. Most of those schools have not a tree or a shrub about them. I believe by consolidating our rural schools, putting them on five or ten acres of land, educating in our normal schools and in our agricultural schools people who shall be especially fitted to teach, locating these schools in many cases in cottages and giving the teachers a longer tenure of office, that we can do a great deal in the way of teaching the children about interesting things, about ornamental things, and give them an insight into industrial affairs that make for wealth and better living in the country. The more I have seen of the subject the more I believe we need to work along the line of consolidation. Then four teachers may take the place of seven in the little schools. One or two teachers can usually be found to teach horticulture and kindred subjects, and thus give our country people all the advantages that the best schools of the city possess.

Mr. P. J. Bentz: I have been greatly interested in the subject of the ornamentation and improvement of school grounds. It is a subject that appeals to me very strongly from the fact that I spent the greater portion of my life on the bleak and open prairie. I can see the improvement that is possible by the various methods that have been suggested, especially that of centralization as mentioned by the speaker who preceded me. I am afraid, however, that time is in the far distant future, and I am afraid the present generation will not reap any material benefit from such a plan, but I would like to see the effort made that will produce results and produce them right away. At present I can conceive of no better plan than for each member of the State Horticultural Society to make it his or her special interest to see that their school grounds are improved and planted to trees and shrubs. The question of too many trees does not appeal to us in our region. The trouble is that we have not any trees. We have schools in the western part of the state where there is not a single tree or shrub within the grounds, and, possibly, not within a half mile of the school grounds.

It seems to me the centralization of the schools would tend to bring about the very thing that I hope will be brought about, but as it appears to me now, I believe it is in the far future, for the reason that the people are not yet ready to centralize. The question has been submitted in a great many communities, but with indifferent or disappointing results, and as we cannot bring this about at

once we should until that time comes make it our special business to see that our own grounds and surroundings are improved.

Arbor Day is largely a sentiment, I am sorry to say, and while there is an attempt at improvement along that line in some communities, in the majority of cases it is simply a waste of time and effort, and simply because the whole responsibility rests upon the teacher. The tenure of office does not extend in the average over three months, and with a change in prospect every year it is difficult to interest a teacher in such a proposition. Possibly no work is done at any other time than Arbor Day. I can recall instances where trees have been planted by teachers and the older pupils, but after the trees were planted and had started to grow and had every chance to live and thrive, the people did not manifest enough interest to fence the grounds in order to preserve the trees, or to put a mulch around the trees to protect them, and under such circumstances how can you expect a teacher to feel much interest in the improvement of school grounds? The horticultural societies of the various states it seems to me could do a wonderful amount of good along this direction if they made it their special interest to see that something was done and that in the right way. There are many places in this country where schoolhouses have nice natural groves about them and pupils can enjoy their recreation in the shade of trees. We cannot put too strong an effort into this kind of work, and I hope our horticultural societies and the people generally will wake up and take hold of this work with more vigor and enthusiasm than they have in the past.

Mr. A. G. Long: It is rather a difficult matter to interest a community in the improvement of school grounds. The best method I have found is to obtain permission from the proper authorities and then go ahead and do it yourself—but be unselfish enough to let somebody else have all the glory of the results. Mr. Nutter made a very fine design for the improvement of our school grounds at Lake Minnetonka, and then we raised funds in various ways to carry out the design, so that the expense would not have to be met with district funds. I "worked" my nursery friends for trees and shrubs, and they responded very liberally. On Arbor Day the various grades and the clasess in the high school planted trees, and my son and I finished the job by putting in two and one-half days more work. If we had waited to "fire" enthusiasm we would be waiting still. Then we organized a "Get-to-Gether" club in the school, drawing up a short constitution for its government, and charging a membership fee of ten cents for high school pupils, teachers and those outside of the school, and the grade pupils were asked to pay as many cents as corresponded with the number of their grades. It was a noteworthy fact that the first grade pupils paid their one-cent membership fees more promptly than any other grade. This is just in line with the suggestion made this afternoon that this work must be begun with the children. I know those little first grade pupils will be interested in the work during all the time that they will spend in school, and the lesson learned will stay by them after they leave school. We have now a substantial Page fence around the grounds, which will be covered with vines; a circular cement

walk leading to the schoolhouse door, and about one hundred trees, shrubs and vines planted. Now my advice is, don't talk as much about it as I have done, but go home and go to work yourself; if you can induce some one to help you so much the better, but anyway go to work, and pretty soon when the results of your work become apparent your community will begin to tell how "Betsy and I killed the bear." But I would also advise that first of all you have a definite plan to work upon, so that the result will be a thing of beauty and not an eyesore. Our plan was so well thought of that it was given an entire page in the March, 1902, number of "Park, Cemetery and Landscape Gardening."

The President: I was just wondering whether the horticultural society could not send out a circular or pamphlet giving definite directions along this line. I do not know exactly how it should be done, but enough should be printed so that school boards and communities could be reached and instructed how to go to work. The pamphlet I have in mind I think should mention the kinds of trees, shrubs and vines that might be planted, and give a definite plan for the improvement of school grounds along the lines suggested by Mr. Long. I think by some such method we might reach and interest a great many communities that otherwise would not accomplish anything in that direction.

Prof. Hays: One speaker suggested that the consolidation of rural schools was a long way off. I am becoming very hopeful that this problem will be solved and at no very distant day. Down in Ohio this consolidation has been sweeping the boards. The trouble in our western country, as I take it, is that we have not learned to get together on any basis. The National Educational Association, the state association, the agricultural colleges and the horticultural societies are getting behind this movement. I believe it is important that we get this matter of consolidation before the people. I believe it will solve the problem.

Mr. Long: The trouble in this western country, or in Minnesota, at least, is that the rate of taxation is so unequal in the various districts. The smaller districts would naturally consolidate with the larger or village districts, where the tax rate is from 50 to 100 per cent higher than it is in the country districts. For instance, we agitated the consolidation of two districts in our community, and while our tax rate was thirty mills, that of the adjoining district was but one-half mill, and the people naturally objected to increasing their tax. This same condition exists largely throughout the west.

Mr. A. D. Barnes (Wis.): We have existing on our statute books a law which permits the consolidation of schools. It is worked something like the rural free delivery mail system. The children are picked up by conveyances at their homes and carried to school and back again, and where the scheme has been tried it has proved a success.

Mr. R. H. Pendergast: We have that system in force in Duluth, and we find it very practical. We carry it out on this line: Our city is so laid out that we are going to have a million people by and by. A good share of the city is still forest. We have been trying to establish schools outside, but we could not get a good teacher for

a half dozen children. So we have consolidated our schools, the city furnishes teams, the children are brought to school and taken home again, we have got better teachers and each teacher has scholars enough, and the schools are better in every way.

Prof. Hays: The movement for the consolidation of schools has got to come gradually. It does not mean the consolidation or bringing of two schools together, but it needs to take in the whole county. It has got to be an entire county and not the children from a little country school taken to a village school. When this thing of wholesale consolidation comes to pass all those little jealousies, this petty opposition of one district to another on account of taxation, will pass away, and we will get this rural school business on the same basis as we now have the rural delivery of mail.

Mr. O. W. Moore: I think the most sensible idea is to consolidate the schools of only one township. Let each township consolidate its schools, let the township bear the expense, and let each township have a school by itself.

THE NOBILITY OF SERVICE.

PRES. CYRUS NORTHROP.

(Address at a banquet given by the Horticultural Society Dec. 3, 1904.)

Mr. Toastmaster, Ladies and Gentlemen. I do not like to begin by differing from you, Mr. Toastmaster, but I must say at the outset I am quite uncertain whether I shall speak on that subject or not. Your very excellent secretary, who was so kind as to invite me here tonight, suggested that topic, and I accepted it as being as good as any that could be suggested at that time, and probably it is as good as any that could come at this time.

I have in the course of my life had occasion to address a great many assemblies of different kinds, and they come to me always with a certain degree of difficulty in meeting the requirements of the occasion. I think I never pondered over a coming engagement with more apprehension than I did last summer when I was called upon to give an address before the National Convention of Undertakers of this city. I had in my good nature granted their request to make them an address and consented to appear on that occasion and speak to the convention, but I had no idea that that convention would ever meet in Minneapolis, or if it did that I should be here at the time; but, unfortunately, I remained in the city all summer, and I went to that convention, and I had a good time, but what I suffered in anticipation can be imagined only by gentlemen who are called upon to address assemblies without an opportunity for adequate preparation.

I am too young a man to have had any remembrance of those reminiscences given here tonight. I was in the state probably about the time that Brother Harrison was serving as an advance guard, so to speak, of the advancing army of civilization, and my only regret is that he did not stay in Minnesota instead of going to Nebraska and trying to sweeten up that state. If he had stayed here I have no doubt the cause of horticulture would have been advanced more than it has. I remember the first years I was here how comparatively weak the horticultural society was and how I admired the fidelity of the few men who were putting their hearts into it—Wyman Elliot for one, and J. S. Harris, a sweet natured, earnest, faithful fellow—and as I look back over the years that have followed since my first experience, and as I look around upon you tonight as representatives of this work, and as I see what you are accomplishing in the production of apples in this state, I am moved to say that I heartily agree with the sentiment expressed in an evening paper: that no body of men in Minnesota, of the same number of men, is doing as much for themselves and for the State of Minnesota as this body of horticulturists. And it is to me particularly delightful the enthusiasm which as individuals you have, as well as the community of interest you feel in the progress of your work. When a man plows an infinite number of acres, sows an infinite amount of seed and reaps an infinite harvest, and goes to the bank ultimately and deposits his cash, it is entirely a commercial and business operation; but when a man laboriously studies the laws of life, hybridizing, developing and creating new species, and there comes into existence a new life, so to speak, something that never was before, why it is almost like being a partner to the Almighty in creation; and I cannot help feeling that these horticulturists as they produce one thing after another that is new have for the object thus produced a feeling almost akin to parental love.

Now you are doing the State of Minnesota a wonderful amount of good, and you are doing it in two or three ways. I stepped into your meeting yesterday, and I heard parts of two addresses, one by Mr. Rowell and the other by Mr. Harrison. The one presented very strongly the commercial value of your work in producing the best apples, and the other dealt with very much effectiveness upon the creation of beauty. You are doing great things in both respects, in making it possible for this state to produce what years ago it seemed impossible for it to pro-

duce; you are giving a value to this state in dollars and cents that cannot now be measured. And the other part of what you are doing, the garden work, the interest in flowers, in the creation of beauty and in creating a taste for beauty, is to be by no means underestimated. If you men do not feel it as much as you might, there are those under your roofs who do feel it—there are the wives and daughters; not perhaps those of the more intelligent men of the state like yourselves, but those whom you are trying to raise and lift up to stand on the platform you stand on and have the interest you feel. There are in all of these homes women whose souls naturally feed upon beauty, and who unless they have beauty to feed upon will grow dull and commonplace; and the man who loves flowers, and the man who makes it possible for every one in the state to have flowers, and the man who multiplies the varieties that all tastes in the state may be gratified, is doing a beneficent and a noble work; and these old men who have grown gray in the service and who have put their hearts into the little plants they were trying to raise and into the methods of future development of the raising of fruit, may well rejoice at the opening of this century that they have so far cleared the way that the younger men coming on will be able to complete what they have intended to do. And if there is now any doubt whatever as to the possibilities of our climate, if any one still fears that this climate is too cold for the permanent raising of apples, I would suggest that if our whistling friend, Mr. Ellis, could be put in some of our forests during the winter, the public faith in the climate of Minnesota would be greatly strengthened, as all the people would naturally suppose that entire flocks of birds had taken up their permanent residence in Minnesota because the climate was so benign. I have said in a few words what I think about the work of the Horticultural Society, and now I come to my text, "The Nobility of Service."

I want to say that a selfish life is never a noble life, and I want to say that a life of unselfish service is never anything but a noble life, and that the men who are trying to do something not for themselves but for the good of the state and of the people who shall live here in the years to come, who as they create a new species of fruit are thinking of the good coming to the state in which they live and to future generations of people—are the men who in a really altruistic spirit are serving in a way that is truly noble. There is no higher ideal for any man, there can be no higher ideal, than Jesus Christ, and he leaving

all the glory that he had came into the world not to be ministered unto but to minister and to give himself for others; and the noblest man and the noblest woman is always the one who comes the nearest to him in the spirit of service and self sacrifice.

CONTRIBUTIONS TO THE MINNESOTA FRUIT EXHIBIT AT THE WORLD'S FAIR, AUG. 17 TO SEPT. 17.

Aug. 17. J. A. Howard, Hammond, 2 boxes Duchess.
Aug. 18. A. B. Lyman, Excelsior, 2 bushels apples.
Aug. 18. A. Brackett, Excelsior, 84 pints Snyder blackberries.
Aug. 18. A. A. Johnson & Co., Sebeka, 16 quarts blueberries.
Aug. 19. Jewell Nursery Co., Lake City, 1 box Okabena apples.
Aug. 20. Frank Moeser, Minneapolis, 24 pints Shipper's Pride raspberries.
Aug. 22. A. Brackett, Excelsior, 2 baskets apples.
Aug. 22. R. E. Hynson, Mankato, 7 quarts plums, Hynson's Honey.
Aug. 23. Dewain Cook, Jeffers, 2 boxes Duchess, 1 quart Aitkin plums.
Aug. 24. Gust Johnson, Excelsior, 84 pints blackberries, 2 bu. Duchess.
Aug. 25. R. A. Schultz, Le Roy, 1 box Duchess.
Aug. 26. Seth Kenney, Waterville, 1 box Duchess.
Aug. 26. Frank Yahnke, Winona, 16 quarts Cheney plums.
Aug. 26. A. L. Goldenstar, Garden City, 1 box Duchess.
Aug. 26. G. A. Anderson, Renville, 1 small box Duchess (5 plates).
Aug. 27. Jewell Nursery Co., Lake City, 48 qts. Wilder & Cheney plums.
Aug. 28. Dewain Cook, Jeffers, 2 boxes Duchess.
Aug. 28. J. P. Andrews, Faribault, 4 boxes Duchess.
Aug. 28. Preston McCully, Maple Plain, 1 box Duchess.
Aug. 29. A. Brackett, Excelsior, 2 bushels Duchess, 84 pints Ancient
Aug. 31. P. H. Overgard, Albert Lea, 1 small box Charlamoff.
Sept. 1. C. W. Merritt, Winona, 1 box Duchess appless.
Sept. 1. Gust Johnson, Excelsior, 96 pints Ancient Briton blackberries.
Sept. 1. Jewell Nursery Co., Lake City, 1 box Forsburg apples.
Sept. 1. Aug. Essig, Sanborn, 1 box Duchess, 1 small box crab apples
Sept. 1. Minn. Exp. Station, St. Anthony Park, 1 box of buffalo berries.
Sept. 2. Jewell Nursery Co., Lake City, 1 box Wealthy.
Sept. 2. A. Brackett, Excelsior, 2 baskets Duchess apples.
Sept. 3. Fred Mohl, Adrian, 1 box Wealthy, 2 baskets Concord grapes, 16 quarts Forest Garden plums.
Sept. 3. Andrew Wilfert, Cleveland, 2 baskets De Soto plums.
Sept. 3. R. E. Hynson, Mankato, 1 box Whitney, 16 quarts plums, Mankato.
Briton blackberries.
Sept. 5. A. N. Wright, Owatonna, 16 quarts Forest Garden and Wolf plums.
Sept. 5. Henry Dunsmore, Olivia, 1 box Cheney.
Sept. 5. H. G. McBride, Aitkin, 1 quart Forest Garden plums.
Sept. 6. Martin Fenning, Sleepy Eye, 16 quarts plums: Wyant, New Ulm, Surprise, Penning's Peach, North Star, Cheney, Wolf, Lottie, Moore's Arctic, Early Red, Stoddard, Neily Blanch, Brittlewood, Mankato, Golden Queen.
Sept. 6. A. Schlemmer, Chisago City, 24 quarts Transcendent.
Sept. 6. Alfred Holmgren, Kirkhoven, 1 box mixed Wealthy and crabs.
Sept. 8. A. D. Leach, Excelsior, 24 quarts Surprise and Lord's plums.
Sept. 8. B. P. Christenson, Hutchinson, 1 box Wealthy, Okabena, Patten's G.
Sept. 9. Emil Sahler, Waseca, 8 quarts plums: Wolf, Pleasant, Faxe, Early Minnesota, Seedling; 5 plates Wealthy and Peerless.
Sept. 9. Charles W. Johnson, Judson, 12 quarts plums: Burbank, Surprise, Wild; 6 plates apples: Wealthy, McMahon, Hibernal and crabs.
Sept. 10. D. D. Vandergon, Maple Lake, 1 branch crab apples, 4 branches high bush cranberries.

Sept. 12. Jewell Nursery Co., Lake City, 2 boxes plums: Hawkeye and Rollingstone; 1 box Okabena.
Sept. 12. Dewain Cook, Jeffers, 24 quarts Hawkeye.
Sept. 12. Mrs. E. Cross, Sauk Rapids, 1 box seedlings.
Sept. 12. A. N. Wright, Owatonna, 1 box Okabena.
Sept. 12. Aug. Logering, Long Prairie, 1 small box apples.
Sept. 12. J. A. Howard, Hammond, 1 barrel Gilbert apples.
Sept. 13. J. P. Andrews, Faribault, 2 boxes Wealthy.
Sept. 13. W. E. Fryer, Mantorville, 8 quarts plums: Stoddard, Comfort, Surprise, Wolf, Forest Garden, Mankato, Rockford.
Sept. 13. George C. Simpson, Northfield, 1 box Patten's G.
Sept. 13. E. C. Reed, Morristown, 4 plates apples: Okabena, Wealthy, Peerless, N. W. Greening.
Sept. 14. Dewain Cook, Windom, 24 quarts Stoddard.
Sept. 14. B. P. Christenson, Hutchinson, 8 quarts plums: Surprise and De Soto.
Sept. 15. H. L. Crane, 16 baskets grapes: Moore's Early, Janesville.
Sept. 15. C. J. Orton & Son, Marietta, 16 quarts plums: De Soto, Weaver, Surprise.
Sept. 15. A. D. Leach, Excelsior, 2 bushels apples: University; 1 basket peaches.
Sept. 15. W. W. Hart, Delavan, 1 large box Wealthy.
Sept. 15. S. H. Drum, Waseca, 1 box Hibernal.
Sept. 15. John Bisbee, Madelia, 1 box apples: University, Good Peasant, Peter.
Sept. 15. T. E. Perkins, Red Wing, 1 barrel and 1 box apples.
Sept. 15. Frank B. Howland, Northfield, 16 quarts plums.
Sept. 15. Fannie N. Bertha, 16 quarts plums: Harrison's Peach.
Sept. 16. H. H. Heins, Jordan, 1 box apples: Okabena, Wealthy.
Sept. 16. W. H. Eddy, Howard Lake, 1 box Wealthy; 16 quarts plums: Surprise, De Soto, Wyant.
Sept. 16. J. P. Andrews, Faribault, 8 quarts plums: Wyant, Hawkeye, Lohman, Wolf, New Ulm.
Sept. 16. Dewain Cook, Jeffers, 24 quarts plums: Hawkeye, New Ulm, Wolf.
Sept. 17. Wm. Oxford, Freeburg, 1 box apples.
Sept. 17. Minn. Exp. Station, 8 baskets grapes (5 varieties).
Sept. 17. W. L. Parker, Farmington, 1 barrel apples.
Sept. 17. T. E. Perkins, Red Wing, 1 bbl. seedling apples (85 varieties).
Sept. 17. A. B. Lyman, Excelsior, 1 box seedling apples.

CONSERVING THE FORESTS.

MR. S. M. OWEN, MINNEAPOLIS,

Last summer I spent a few weeks in northeastern Canada, getting as far north as 250 to 300 miles north and east of Quebec, for instance, and during my travels I fell in company with and made the acquaintance of a gentleman who is the owner of a million acres of land in that country. A million acres of land! That is something over 1,500 square miles, as you know. He was a very modest, unassuming gentleman. I was with him a fortnight and became very much attached to him. I asked him one day about the character of those lands. They are covered now with a forest growth almost entirely and very largely spruce. I asked him what those lands would be worth after the timber was taken from him, whether they would be agricultural

lands or not. He said a good deal of the land is non-agricultural land. It would not produce agricultural crops profitably. "But," he said, "that does not concern me any because all the timber is properly cut; our chopping is properly done; there will be a perpetual forest of timber upon those non-agricultural lands, and we will eventually make them more profitable than would be the agricultural lands after the timber is taken off from them." I cannot conceive of any crops that would grow on agricultural lands as profitable as the spruce that they grow on non-agricultural lands. Of course, this spruce has been made valuable within the last few years, and they have just begun to utilize it in that country in the making of pulp. One mill is making 150 tons of pulp a day, and this is made at the head of the Sagawa river, at the head of navigation, and that pulp is loaded into ships, and the product is all sent under an annual contract to England. None comes to this country. There are other mills representing from thirty to forty thousand tons of wood pulp a day. I noticed that wood pulp makers like to use small timber—they like to use butts of trees six to eight inches in diameter, because the machinery works to better advantage on blocks of that kind. I do not know whether you know how pulp is made, but it is ground to pieces by great grindstones, and they take it from the side of the block. Notwithstanding that is the desirable size to use, I noticed they were using larger blocks, from ten to twelve and even more inches in diameter, and in some cases the blocks were split in two so they might use larger trees. That was done notwithstanding the inconceivable quantities of timber there, yet they are beginning to conserve the timber by cutting the larger trees and getting the growth of smaller trees. So that is what Mr. Scott meant by calling it intelligent chopping that would insure a continual revenue from those lands that would be worthless for any other purpose.

I relate this incident simply to emphasize the reply made by Gen. Andrews to my question about the forests that were bringing those fine revenues to the European states that he mentioned. Land that is of no value without timber is extremely valuable with the timber. As the General says, forestry means the reforesting of those lands and getting a revenue from those lands that would otherwise be profitless. It is for that cause and purpose that we are asking and urging sufficient additional appropriation from the legislature of this state to begin the work, at least, of foresting these waste lands that we have in the state,

a great many million acres of them. Then we will not only be getting a harvest from the lands, but we will be getting the benefit of the presence of those great forests, which I think will be pretty nearly as great in dollars and cents as will be the harvest we get from the lands themselves. At any rate, it is almost impossible to compute the advantage to us if we can have those great forest areas properly cared for from what they would be if they were barren wastes. So this forestry idea of ours is not a theoretical one; it is not a chimerical one. It is one of the most intensely practical and economic questions that confronts us in this state or any other state that has conditions similar to ours. The thought has permeated the members of the legislature to the exclusion of almost every other thought that those who advocate forestry are visionary folks, that there is a little too much daylight between the earth and our trees, and therefore they have no confidence in us and do not listen to us with even ordinary respect when we go before them, when as a matter of fact there is no one article of agriculture or anything that comes from the earth, there is no one thing that is more essential to the well being of this state nor that will add more to the profit of the state than will that one department of a properly and well regulated and administered forestry system. We are continually advocating this kind of economic principle, and we are justified in this by the highest laws of economics. If any farmer in the state has a few acres of barren land on his premises, and he can by any possibility put those acres in a condition to get a revenue from them he will do it, and he will consider it the best possible business practice, and he will spend some money in advance in order that he may get a revenue from that land. We are simply asking the state to do for itself what the farmer would do for himself. There is nothing visionary or impractical about it, it is a straight and simple business proposition.

There is one word I want to say in closing. I do not want to let the occasion pass without acknowledging the work that is being done in the way of increasing the forest area of the state by the private planters all over the state: many of them, thousands of them, each one of whom is doing a little. It may be a few trees, it may be a few acres, but in the aggregate it makes a forest area that will contribute in the future very largely to the value of the timber supply of the state. I do not want to embarrass the gentleman, but my friend Gregg is an example, and I do not know but that we are greatly indebted to him for

that particular feature of the forestry question of the state. Mr. Gregg has planted and has grown on his farm trees, groves, I may say forests, on land that yesterday was in the semi-arid belt of the state—although it was conspicuous for its absence last summer—but it was there, and the trees would not grow well if at all. But he has demonstrated that trees can grow there, and he has made in a few years what was a prairie farm into a farm that I have told him looked like an old New England homestead two centuries old. Mr. Gregg is only one of a few men who is doing this kind of work, and when we are advocating this larger measure of forestry in our state we are not unmindful of what citizens are doing, and if the members of the legislature could be inspired with only one-half the enterprise and the public spirit that is being manifested by those individuals who are planting forests to the best of their ability all over the state, I would be extremely hopeful of satisfactory progress.

I recall my experience in the state, now about twenty years —and I traveled over sections of the state that were once treeless; you could see no tree in any direction as far as the eye could reach. I remember sixteen or eighteen years ago traveling over a section of the country. I had been traveling across it for a half day and had seen no tree anywhere, but finally looking away across the prairie, way down on the horizon, I saw something that looked like a belt of green. I asked the gentleman with me, "What is that?" He said, "It is Mr. So and So's tree claim or timber belt." There it was, a very conspicuous part in the landscape, and as we drew closer to it it began to get larger and more beautiful, and finally we came up to it, because I wanted to interview its planter. I traveled over the same country two years ago, but it has lost its peculiar charm, and that timber belt was no longer conspicuous because it had neighbors all around it. The aggregate of trees where a few years ago nothing was growing is very large indeed. It seems to me that the members of the legislature in the districts in which those trees and groves are growing ought to be imbued with the spirit with which the growers of those groves were inspired, and if those groves did not teach them the value of the forestry movement and what the state ought to do in the way of promoting it, then it seems to me impossible to teach them, they are unteachable—in fact, it does not require a great stretch of the imagination to believe that some of those people are not teachable. (Applause.)

Secretary's Corner.

MEMBERSHIP OF THE HORTICULTURAL SOCIETY.—The present membership roll continues to be much in advance of that of last year, there being now enrolled 1663 annual members, besides approximately 120 life members, making almost 1800 members, about 350 more members on the roll than last year at this time.

A SUCCESSFUL ORCHARD AT SAUK RAPIDS.—E. W. Mayman, at Sauk Rapids, in a letter under date of Sept. 24th says, "My apple and plum crop are excellent and of good quality. I am just now picking my Wealthy and will have over 100 bushels. My apple and crab crop will exceed 300 bushels and plum crop between 40 and 50 bushels."

THE SEEDLING APPLE EXHIBIT AT ST. LOUIS.—A very full exhibit of seedling apples from the orchard of T. E. Perkins, of Red Wing, is now being made at the World's Fair in connection with the Minnesota Fruit Exhibit. Mr. Wyman Elliot went to St. Louis on Sept. 15th to set up this seedling display. He writes that there are 130 varieties in the collection. There are also a few seedling apples from other parties. The judges have not yet passed upon this collection, but it is quite certain there is nothing like it in Horticultural Hall.

PROF. S. B. GREEN ON THE PACIFIC COAST.—Prof. S. B. Green, horticulturist of the Minnesota Experiment Station, made quite an extended tour of the Pacific coast this summer, visiting many of the experiment stations and other points of special horticultural interest. We shall have the pleasure of hearing from him at the winter meeting of our society as to his observations during his trip. Our readers will be interested to know that Prof. Green is to spend the first week in October at the World's Fair as one of the judges of apples and pears.

WHO HAS A LARGER WEALTHY THAN THIS?—The largest Wealthy that has come to this office is from the orchard of George S. Perry, of Farmington. It measures 11¾ inches around and weighs exactly 10 ounces and as to shape is superb. It is a perfect type of Wealthy except, of course, that it is extra large. Who has a bigger or better Wealthy than this? Should like to hear from the next man. This specimen grew on a tree planted last year. There were several other apples on the tree.

THE JEWELL NURSERY WINDMILL AT ST. LOUIS.—The windmill which the Jewell Nursery Company erected and maintained in the horticultural department at the late Minnesota state fair has been removed to a central location in Horticultural Hall at the World's Fair and erected as a part of the Minnesota Fruit Exhibit. For the benefit of our readers who did not see this beautiful structure at the state fair, a brief description is given. The mill is a very good fac-simile of an old fashioned windmill, standing on a base of graduated shelves on which are placed glass jars of fruit of various kinds and plates of fruit. The mill itself is veneered with apples and decorated with mountain ash berries. It has four sails which turn about in a natural way through the operation of simple machinery in the interior. The entire structure is about thirty feet high. We hope to publish a photograph of this windmill in the next issue.

SUMMER SEEDLING APPLES AT THE STATE FAIR.—The exhibition at the late state fair of a number of summer seedling apples, that is, varieties of seedling apples that mature in the summer, emphasizes the importance of having a summer seedling class in the premium list. There are some valuable summer seedlings that have heretofore been overlooked at the fair because they mature and are gone before the fair is held. These seedlings could be kept in cold storage in good condition for exhibition in a "summer seedling class" at that time, and it seems to be wise to create such a class.

A. W. SIAS AT THE WORLD'S FAIR.—Mr. A. W. Sias, well known to all the older members of our society, is now visiting the World's Fair or was on September 22nd, when Mr. Elliot met him there. Mr. Elliot says of him in a letter dated at that time, "I have just met A. W. Sias, and we have been renewing our early experiences in Minnesota. He is 73 years old and was the first treasurer of our horticultural society." Mr. Sias will be known to our readers as the writer of a number of poems published under the nom de plume of "Sam Bucus." He is an old life member of the society, formerly a nurseryman at Rochester and now for some years residing in Florida.

DEATH OF AN HONORED LIFE MEMBER.—We regret to announce the death of an honorary as well as highly honored life member of this society, Jacob W. Manning, who passed peacefully away at his home in Reading, Mass., on September 16, at the ripe age of seventy-eight years. As the founder of the Reading Nurseries, he has continued to this advanced age the veteran nurseryman of New England, though the management of the business long since passed into the hands of his sons. Mr. Manning was often in Minnesota, and to many of us who had the pleasure of an acquaintance his death comes as a personal loss.

A NATIONAL CONFERENCE OF HORTICULTURAL SOCIETIES.—A convention has been called in Horticultural Hall, World's Fair, for October 26th, of the officers and workers in state and district horticultural societies, with the purpose of perfecting a permanent organization. A short program has been prepared, consisting of subjects pertaining to the work of horticultural societies, and your secretary has been honored with a place on this program, although he has felt compelled under the circumstances to transfer this honor to another, and Mr. Frank Yahnke, who will be at the World's Fair with the Minnesota Exhibit at that time, has consented to take his place. The object of this organization is most excellent, and it is probable that the meeting will result in placing it on a permanent basis.

SAVE FRUIT FOR THE WINTER MEETING.—Have you saved any fruit for the winter meeting, which convenes in Minneapolis December 6th to 9th? The premium list as published in this number will be a guide to you as to the quantity and varieties of fruit to save for this purpose. Probably there will be some additions to this premium list in the way of special premiums, but the writer is not yet prepared to speak of this. It is very desirable that we should have a large display of fruit at this meeting and specially seedling apples. Every seedling apple of probable value in the state ought to be exhibited at that time. It will be noted that seedling apples from western Wisconsin, northern Iowa, North Dakota, South Dakota and Manitoba, may be shown in competition with Minnesota seedlings. Lay your plans to attend this meeting and bring a fine fruit display.

THE MINNESOTA FRUIT EXHIBIT AT THE WORLD'S FAIR.—A large amount of fruit has been sent down from Minnesota to this exhibit the past month, as may be seen by looking over the list of contributions published in this issue. Besides the fruit that has been shipped there, something like 120 bushels of apples, 50 baskets of grapes and 25 cases of plums have been placed in storage for use during the last two months of the fair, which closes on December 1st. Apples generally are not as large as they have usually been, but we have succeeded in securing some very fine specimens. About 50 bushels of apples secured are of the Wealthy variety, most of them beautifully colored and many specimens ranging from 11 inches upwards. There is a very full exhibit of all kinds of fall fruits grown in Minnesota now on display with our state exhibit. Mr. Redpath reports that on Sept. 24th, besides the fruit in glass jars, there were 314 plates of apples, 179 of plums, 109 of grapes, two of peaches and three of raspberries. Referring to our fruit display Mr. Elliot in a letter dated Sept. 22nd, says, "We have plenty of good fruit now for our exhibit. Our grapes are drawing considerable attention. The plum exhibit is keeping up fine. We try to make the exhibit as attractive as possible. The Perkins' seedlings are holding up fine and are quite a show of themselves." Quite a large amount of contributions of fruit are yet to go down to the World's Fair, and every day records a number of consignments. The friends of the exhibit are standing by it in grand shape, and during the coming two months, at least, the Minnesota Fruit Exhibit at the fair ought to be highly creditable.

PREMIUMS ON FRUIT AT THE 1904 ANNUAL MEETING.

GRAPES.	1st Prem.	2d Prem.	3d Prem.
Collection	$5.00	$4.00	$3.00
APPLES.			
Collection, not to exceed 10 varieties	6.00	4.00	2.00
Apples kept in cold storage. No variety can be shown in this lot that will keep under ordinary cellar conditions till the date of the meeting. Each named variety shown (with the above restriction.)	.50	.25	.....
Each variety of apples (or crabs) included in the 1904 fruit list of this society, or in the 1904 premium list of the Minnesota State Fair (not kept in cold storage)	.50	.25	....
Peck of Wealthy apples, the fruit exhibited to be at the disposal of the meeting	4.00	3.00	2.00

SEEDLING APPLES.

Competition in seedling apples is open also to the western half of Wisconsin, the northern third of Iowa, and all of North Dakota, South Dakota and Manitoba.

EARLY WINTER SEEDLING.—The fruit shown must not have been kept in cold storage. A specimen of wood three years old (at least six inches long) taken from the tree bearing the apples shown, and a concise history and description of the tree and its fruits, must accompany each entry.

Competition is open to all except on such varieties as are being propagated for sale by some person other than the originator.

Premiums will be divided pro rata among all the entries commended by the judges according to the comparative merit of each as a commercial fruit. Premium $40.00.

LATE WINTER SEEDLING.—Same conditions as for early winter seedling except that if found necessary the fruit shown may be retained and final decision reserved till later in the winter. Premium $60.00

Some special premiums will probably be offered as last year. Any parties willing to offer such premiums are requested to communicate with the secretary at an early date.

DARK FRENCH, FRANCOISE ORTEGAL AND GRANDIFLORA ALBA PAEONIES.

THE MINNESOTA HORTICULTURIST.

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THE PAEONY.

C. S. HARRISON, YORK, NEB.

This belongs to the Runnculacea family. It derives its name from a Dr. Paeon, of legendary renown, who lived about the time of the seige of Troy. It is said he first used the roots for medicine. In mediæval days it was known as the gallant herb of the sun, good for falling sickness, and the black seeds taken before retiring would keep off the nightmare. Infused in sack and taken just before and after the new moon, it was a sovereign remedy for weakness of the back. In case of children the surest way to ease them was to hang a bit of the root around the neck.

There are several distinct native sorts. The officinalis, the "piny" of our mothers, is a native of Switzerland and was introduced into England in 1548. The tenuifolia, or fern leaved paeony, is a native of Russia. It has extremely delicate foliage. These are two varieties, double and single. The double is the first of all to flower—following the tulips. It is like a General Jacqueminot rose in beauty. The Edulis is a native of Tartary. The roots are eaten. Then we have the Chinese and a unique and distinct family of Japanese. These are mostly large single and semi-double. Crosses have been made on a large scale between these varieties—mostly between the Chinensis and officinalis families.

The old fashioned "piny" is not hardy in the west and northwest. It has roots like the sweet potato, while the newer sorts have roots more like the pieplant though much more solid.

Fifty years ago we had about twenty-five kinds of choice paeonies; now we have over 2,000 varied sorts, and the number is increasing. In short, we are on the eve of the most amazing developments of this flower. In Europe and America new sorts are being produced all the time from seed.

Their Hardiness.—It is a matter of congratulation that the most beautiful flower in the world, in many respects surpassing the rose, is the hardiest of all. It is a success in Manitoba, Minnesota and the Dakotas. The wonder is, when this flower can glorify all the bleak northwest with its loveliness, that it is

Golden Harvest paeony. Originated in Nebraska. Immense fragrant, golden flower with a tiny blossom of purest white in the center sprinkled with carmine.

not planted on a larger scale. Millions of dollars are wasted every year on failures, while this is a success.

One year I imported a lot from England. By a blunder they lay a month at the express office in Lincoln. When I went for them the moss was dry as powder, and the roots snapped like sticks. The buds were dried up. Of course the express com-

pany pronounced them dead and paid for the delay, as they should. As a forlorn hope I took them home, cut off the dead roots and planted the buds in moist earth in a box in the cellar. This was in November. It was an open fall. In December I saw they had revived and had thrown out tiny rootlets. I planted them. They were of course frozen solid all winter, and in the spring I had twenty-nine out of the thirty choice ones, some of which cost $2.00 a root.

In the fall I have often cut up roots for sale or replanting and left the rubbish on the ground, and found in the spring tiny buds which had been neglected were throwing out leaves and roots after freezing and thawing all winter. The root of the paeony is like the gripsack which carries the supplies of the traveler. It has life, vigor and bloom in embryo, and this makes it the easiest of anything in the plant world to ship or handle, and with any thing like decent care you have no loss. Will anything kill them? Yes. Water must not stand on them. You must give them good drainage, and in the extreme northern states it is well to mulch them in winter. This should be done with all perennials.

Their Fragrance.—This adds charm to their loveliness. Over a garden of these flowers there are billows of perfume. Some ladies drove nearly twenty miles to visit my paeonies while in bloom, and they said they knew they were getting there by the fragrance which was floating in the air. Some have the odor of the rose. The glorious Humei is cinnamon scented; some are like the heliotrope; and I have one promising seedling which I have named Water Lily because it resembles it in form and fragrance. Some, of course, are odorless but make it up by the splendor of their beauty.

Their Loveliness.—When I say they rival or surpass the rose, I am disputed at once; but I have the finest varieties of both blooming side by side, and I have had florists compare them, and the rose is left. Where is there anything that can excel the Baroness Schroeder—a sweet ball of etherial, exquisitely fragrant loveliness, so fairy-like it seems as though it might float away; in the center the delicate, lingering of tints of gold, and the rest of snowy whiteness. There is Floral Treasure, a hemisphere of symmetrical beauty, with rose-like perfume—six inches in diameter—delicate flesh in color fading to white. This is Nebraska born, and when you in Minnesota get fairly into business you will rival or surpass it. There is Plutarch, odorless yet wonderful in form—a ball of varnished crimson. Or take Tecumseh, the

solidest of them all—a system of blooms packed and pressed together; a fine keeper, so firm you could stone a dog with it. Lady Alexander Duff is supposed to be the finest paeony on earth. It ought to be. Mine cost $5.00 a root, wholesale in England—lovely, white, tall, robust and highly perfumed.

Festiva Maxima has been propagated for thirty years, and yet the demand is greater than ever, and the supply is always exhausted. It is of immense size, often six inches in diameter, of clear whiteness, fragrant and in the center drops of deepest red sprinkled, which brings out the white in clear relief. The blooms of this variety sell in Chicago for $2.00 per dozen, wholesale.

As cut flowers the paeony has few rivals. Just as the buds are opening they are cut with long stems which are placed in water over night; they are then shipped to their destination, where they are kept in cold storage until needed. In England and America there is a growing demand for these flowers for weddings and funerals. When Mark Hanna's daughter was married last summer the house was beautifully adorned with white paeonies.

The Time of Blooming.—Two years ago the first opened May 5th, and I picked the last July 5th. Last year they were in bloom six weeks, but it was an abnormal season. The last of April when in full bud they were frozen solid for two days, then they were pelted with three hailstorms. These flowers can be forced in the spring, and by putting good sized roots in cold storage till the first of June and planting out then, with cold storage for late blossoms, you can easily have them three or four months. I think as we get better acquainted with them we can enjoy them for six months.

I am astonished that the great bleak northwest are so reluctant in planting these flowers, which are hardier than the pie-plant. Most of the western planters send all they can raise east; but few go to the west, where they are most needed.

Raising these thoroughbred flowers is a delightful and profitable occupation for ladies, and many are engaging in the business. With care you can raise 500 to 1,000 from one root in ten years. They are far ahead of thoroughbred live stock. You know where they are nights. They do not get into wire fences and tear themselves up. If you raise chickens they may have the cholera, or the chicken thief may get them. It costs nothing to winter them. You sell the roots in spring or fall and the blooms in summer.

Get the best, and they will always sell. I had one root of Baroness Schroeder and in four years sold $34.00 worth from it and had some left to plant.

September is the best time to plant, for the roots begin to send out little rootlets for spring. If planted in the spring put them out as early as possible. If you raise them for roots they should be taken up and divided and replanted every two or three years.

Festiva Maxima paeony.

If you raise them for flowers let them stand five or six years. Then you can divide them. But you will find many large club roots that will be difficult to plant. You can give them almost any kind of treatment. I have known clumps of them in Nebraska to bloom for twenty years in grass and among trees. They are as patient as a Rocky Mountain burro under neglect, but they respond to generous care. If you want them at their best and wish to increase them rapidly, have rich ground spaded two

feet deep, well fertilized with hen manure if you can get it. Prepare it a few months before you plant, so the manure will be well incorporated.

Does it hurt them to crowd them? No. The better they are treated the more vigorous they are; left too long in neglect the buds will begin to die. The plant can be entirely exhausted so that it will throw up shoots but they will have no strength to flower. If you get large fine blooms you must give the plant something to make them of. You cannot expect your choice Jersey cow to give the best results if fed only on straw.

Some people ask "Why don't my paeonys bloom?" They may be exhausted, or they may be cheap, shy bloomers. You have two cows in your herd; one gives you three times the results the other does. So always get the best.

There are four points to score in a thoroughbred paeony: beauty, fragrance, readiness to bloom and a prolific breeder or multiplier. For instance, J. Discaisne is a fragrant, lovely flower, but it takes about five years to double itself. That don't pay. La Tulipe is as fine a flower; two years ago I cut one two-year root into seven; this fall I cut up the seven and had twenty-eight. That pays.

I am now at work on an international pæony pamphlet, with writers from Europe and America, and well illustrated. I design it as a complete manual for the successful cultivation of this glorious and hardy flower.

Mr. Latham: I would like to ask a question in regard to keeping the cut flowers of the peony. It is only in flower for six weeks or two months. Is there any way of keeping the cut flower for commercial purposes?

Mr. Harrison: The flowers are cut just as the buds open, with long stems, the leaves stripped off, then put in a tub of water over night, carefully packed and shipped to their destination, where they are put in cold storage, where they will keep for a long time. There is a very late one I got from a large grower in Chicago. It is called the Richardson's Superba, and they have kept for two or three weeks, and thus the season was extended. If the leaves are stripped off and the stems left long, they will open their blooms if cut in the bud.

Mr. Loring: Do you fertilize very heavily?

Mr. Harrison: The peony is about as patient as any flower that grows. A neighbor of mine had some that bloomed for twenty years, but the blossoms were small. It pays to take the best of care of them. By the best of care I mean that the ground should be spaded two feet deep, and thoroughly prepared

before the plants are set in order to get the best results. I have no trouble in getting 1,000 from one in ten years, and the flowers are much more beautiful.

Mr. Loring: When heavily fertilized is there not a tendency to go to foliage instead of flowers?

Mr. Harrison: I don't think so. You take the La Tulipe, the Grandiflora Alba and a great many of that sort, they will respond very readily.

Mrs. Jennie Stager: Do they need resetting?

Mr. Harrison: If we raise them for the roots we do so, but if you let them remain for twenty years there is a continual growth and a consequent development of the flower. If you grow peonies to sell it is better to cut them up, but if you want them to bloom—and a great many do not show up until four or five years old—you had better leave them alone for several years.

Mrs. Stager: When is the best time to transplant?

Mr. Harrison: The best time is in September, or you can plant them early in the spring. If you plant them in the spring, plant them as early as possible. I planted in the spring on good strong roots, and we had an enormous crop of flowers.

Mr. Philips: Would you advise planting as far north as this?

Mr. Harrison: Oh, yes, certainly.

Mr. C. C. Hunter: Are you troubled with insects?

Mr. Harrison: No, we are not. Some are troubled with ants, but if you scatter a little sugar around your plants the ants will not trouble them. The buds exude a sort of honey which the ants are very fond of, but I do not think they destroy the flower; they are after the honey.

Prof. Washburn: They are after that sweet substance that exudes from the flower, but they do not hurt the flower.

Mr. Harrison: I have never seen any insect that will sting them like they do the rose. It seems to be perfectly immune from disease and insect pests.

Mrs. Loring: Is it not just as well to leave them alone if you want the blossoms for home use?

Mr. Harrison: It depends upon the care you take of them. If you find in about ten years that they are preying on each other I should transplant. Old roots root in the center. I got some Festiva Maxima from Teas. He let them grow so long they looked like clubs. He let them stand a little too long, and the roots were too large. I would not let them get too long.

Prof. Waldron: Can you retard blossoming?

Mr. Harrison: Yes, there are two or three different ways. One of my neighbors dug a cellar and put some eighteen inches of dirt over some, and they came up two or three weeks later. That was too deep, of course, but if you cover them a foot deep it will retard them. The better way is to take good healthy roots and put them in cold storage, and on the first of May take them out and plant them. If the roots are large there is so much plant

life stored in the roots that they get to blooming and have flowers down to August. There is a wonderful progress being made in growing peonies from seed. I have some Japanese peonies, and they are beautiful. They are different from the others. They are single and semi-double, and I obtained some very fine blooms, and I expect to get some choice flowers as crosses. They are standing side by side with the others, and I expect to have the bees do the fertilizing. Peony culture has reached that stage where we are ready to astonish the world with the display of beauty.

Mrs. M. M. Barnard: How many years will it take for the seedlings to bloom?

Mr. Harrison: Perhaps some six or seven years. I have known peonies to live single for twenty years and then come out double. It is also a fact that some of the double ones produce single flowers. That is an abnormal condition.

Mr. Long: Do you remove any of the buds in order to secure larger blossoms?

Mr. Harrison: It is not necessary as a rule. We have one, it is a new one, which we call the Ste. Cecilia. We have a superintendent of music, a young lady, and as I did not have a name for the flower she asked permission to name it. She gave it the name of Ste. Cecilia, and we have classed it under that name. We have three large ones growing on one stem. I should hate to cut one of them off. However, you can cut off the inferior buds and leave the larger ones. Those that come up first will bloom first, and if you have some come up a little later you can in that way prolong the blooming season.

MULCHING.

H. H. POND, BLOOMINGTON.

When our fathers first began their attempts to raise apples in what is now Minnesota, they considered this a cold and uncongenial climate on account of its winters. Therefore they selected the warmest accessible places for planting their apple trees—south slopes protected by trees or hills from the north winds and where the sun could reach them with the greatest force.

They failed; not always and entirely, but generally they failed. Some of them got a little fruit, and then their trees died. Many trees perished before they bore any fruit.

Among the first there were no long lived trees, or, rather, they were all very short lived—a little later a very few, as Mr. Somerville, for instance, succeeded in getting trees to live to a good old age. But generally speaking they were all lost.

Of course the natural question was, "What causes the failure," and the natural answer was, "The cold winter."

Now we are having some success with the king of fruits—and some failures, too. But we can look back and profit by the experiences of the past. We see that the cold of winter is not the only hard thing in the climate for apple trees; but the heat of summer and the drouth and, perhaps, the moisture too are possibly as hard as the winter. What can be done to overcome these difficulties?

There are several ways of ameliorating these summer troubles, and one of them is mulching, its object being to keep the earth cool and moist around the roots of the trees.

There are many opinions concerning the utility of mulching. Some are very much opposed to it; some put the question this way, "Mulching vs. cultivating."

I do not think mulching should be considered a substitute for cultivation but should be used in conjunction with it.

In fact, cultivation has come to be considered one kind of mulch, as we speak of a "dust mulch."

Consulting Webster as to the definition of mulch, I find he says "half rotten straw." But I will not consider it in this restricted sense, but to mean any covering for the ground to retain moisture and coolness. Dust mulch is coming into great favor of late and with considerable reason, for it is adapted to use on a large scale and costs nothing but the labor of preparing it, and this labor at the same time does away with weeds.

There is no doubt but the dust mulch is a very good thing, but it has its drawbacks and failures. It is made, as is well known, by a thorough cultivation of the surface of the soil, and when this is well done it will retain moisture for a considerable time. However, the slightest shower causes a crust to form and spoils the mulch. Well, it will be said, "Just run the cultivator over it after every rain, and you will preserve your mulch all right." Just so, but this is sometimes hard to do.

Our most severe drouths are often characterized by frequent little showers, and it was from their bad effect in crusting the soil that the old idea came that a little moisture is worse than none at all.

It is often very difficult to keep the surface stirred after every shower, especially for a busy man. Once a week is often enough to stir to keep the weeds down, and that is about as much labor as most of us think we can afford to put on cultivation. But we will suppose we have just got our orchard worked to a good mulch. It is planted between the rows, say, with various garden crops, as sweet corn, peas, beans, melons, etc., as is so often

recommended to beginners. Our orchardist views with satisfaction his fine dust mulch and thinks, "Now I will have a week to work at my corn, for that will do my orchard for a week." But before night he observes a cloud in the west, and in the evening a few drops of rain fall, not enough to wet the soil any below the surface, but he finds on examination next morning that the sun is crusting the ground, and he must do his work over or lose his moisture. So he spends the day going over his orchard with the cultivator again just to break the crust, and his cornfield suffers another day for the needed cultivation. The following night there comes a good shower which wets down some, and the next morning he says, "What a foolish man I was, I should have waited till the rain was over before stiring that soil. Now I shall have it to do over again. But I will learn a lesson from this, and next time I will not cultivate on the first temporary clearing off of the sky but will wait till the rain is over, and then one going over will do, while this time it takes two." So he spends another day in the orchard, and the corn field suffers again.

Next time there is a shower he waits, thinking there will be another soon, but the expected shower does not come. He waits several days, and as it looks like rain some of the time he goes on with his other work and lets the orchard go. Time slips away rapidly, and before he knows it the orchard soil is crusted, the dust mulch spoiled, and the moisture gone, and he realizes that a drouth has set in, and he is caught unprepared.

But how different is the straw mulch. We will suppose that is put on in July just after a good rain, and the job is done thoroughly, placing the straw several feet out from the tree on all sides and thick enough to be effective. If more rains come the straw does no harm; if they do not come and a drouth sets in, what a blessing it is to those trees! The soil will be loose and cool and moist for a long time after the drouth begins. Then if this straw mulch is used in connection with thorough cultivation so much the better. The straw will do its work close around the trees and under the low hanging limbs, and the cultivation will take care of the spaces between the trees.

Then if cultivation must stop for the maturing of the garden crops between the rows or for the press of work in harvest or any other cause, the owner will have the satisfaction of knowing that his straw mulch is all right if the dust mulch is destroyed. Then again when those little dry weather showers come they

do no injury to the straw, but what little moisture they do give is preserved much better in the straw than on bare ground.

One objection which is sometimes raised to straw mulch is, that after a drouth when the rains begin to fall the straw will shed the rain away from the trees. This might be so if the straw were piled close to the tree and left in a rounded up heap. But that is not the way it should be put on. It should not be placed against the trunk of the tree and should be thicker at a distance of two or three feet from the tree. That will leave a depression where the tree is, and the rain will be gathered in instead of shed off.

Now for some instances of personal observation of the benefits of straw mulching:

The fall of 1888 was a very dry one in the vicinity of the home of the writer. We had decided that we wanted a row of elm trees along the side of our driveway running from the house north up an incline and over a gravel knoll. The ground was covered with a blue grass sod, and with my present experience I would not think of setting any kind of tree without better preparation. However, the job of setting them was given to a man who was in the business, and the holes were dug and the trees put in about the first of November. The ground was dry as deep as the holes were dug and consisted principally of gravel. Thinking that it was rather a hard prospect for the trees after the job was done, we decided to mulch them, and did so, using some old straw for the purpose.

While doing the work some neighbor passing by called out to us and said, "You are spoiling your trees. That straw will kill them." Not seeing how the mulch could hurt them, we went on and finished the job. The trees all lived through the winter, and all but two are alive yet. They have been kept mulched continually, and though they have passed through several very dry summers have grown well and are now about a foot through in stem and twenty-five feet high. They are things of "beauty and a joy" while they last.

One more instance, and this relates to apple trees: The trees were set in the spring of 1893 in pretty good soil and were mulched. After the 20th of May we had no rain to speak of till some time in the fall. They stood it all right and made a good growth. The next summer, 1894, was the dryest ever known in that locality, and from the way those trees grew I concluded apple trees did not mind drouth, but now I think it was largely the mulch. When the rains did begin in the fall I thought per-

haps I would have to remove the mulch to allow the rain to penetrate, but on examination found that it was wetting down as well or better under the mulch than away from it. So I concluded that continuous mulching was the thing for me—straw close to the trees and "dust mulch" between the rows.

It certainly preserves moisture, keeps the soil loose and cool, and protects from excessive freezing in winter.

Mr. S. O. Tuve: Don't you think the mulch provides a good home for insects?

Mr. Pond: I presume it does.

Mr. Tuve: I know at the experiment station Prof. Green keeps the ground perfectly clean. I presume he has some reason for it.

Mr. W. L. Taylor: I visited an orchard this summer and found the trees lying in almost every direction. I said to the owner, "What is the matter with your orchard?" He replied, "I have mulched too much; I will never mulch again." The trees could not stand up.

The President: How large were the trees?

Mr. Taylor: They had been planted seven years. They were the Northwestern variety, but they could not hold up their wood.

Mr. J. P. Andrews: How deep were they planted?

Mr. Taylor: I could not tell you that. The man was very much of the opinion that he did not want any more mulching.

Mr. Brackett: I don't think it makes much difference what you put on top of the ground, the roots will go where there is subsistence. I just got back from a trip to the northern part of the state, where the upper portion of the soil is very rich, and I found that the forest trees do not go down over a foot, and it is because they draw their nourishment from that portion of the soil. Mulching will certainly bring the roots to the surface of the ground.

Mr. N. C. Radabaugh: There are two classes of roots sent out. Some are sent out with little small feeders. I mulched some Martha trees last year, and I mulched them very heavily, and in that mulch there was an abundance of little fine white roots, and all seemed to be of one size. I cannot believe that those roots being exposed would be the means of affecting the tree, and on our soil, which is very light, I have always mulched, and on our little homestead the orchard has had nothing but mulching. I know there is a great deal of fruit there, because mother never fails to send us a liberal supply every season. The fruit is large and perfect. That orchard is mulched in the winter time every year. We have bees in the orchard, and the fruit trees are well fertilized. That the fertilization of the flowers is perfect is indicated by the number of seeds developed, and I think the bees and the mulching go a long way to add to the regular crop of fruit.

Mr. Studley: I just want to add my testimony in the matter, and I wish to say that I can demonstrate to the satisfaction

of any man—and give him the privilege of a thorough examination—that I have apple trees that have borne thirty-eight consecutive crops that for twenty-five years of that time have never received any cultivation that I am aware of. My experience with mulching has not proved it a detriment, but, on the contrary, it has been of the greatest benefit I have ever found in my orchard business. My mulching has been done with clover. When I concluded I did not want to bother with cultivation I seeded the orchard down to clover. I have never been so greedy that I cut that clover and took it off from the ground. I just let that clover grow, then cut it off and let it lie on the ground, and it is in that way I mulch my trees regularly every year. I am too careful a man to try to remove that mulch. I want my trees to live well and to do something. For thirty-eight years they have borne crops, and this past season I marketed in Minneapolis about six hundred bushels of Duchess. From some of those Duchess thirty-eight consecutive crops have been taken, and from one tree last year I took thirty-five bushels of merchantable apples, and from another tree I took twenty bushels of merchantable apples, besides taking off a good many bushels of cider apples. Don't be afraid to mulch your trees; it is the salvation of your trees. It preserves the tree in winter, but it also preserves it in summer, and my experience and obsrvation goes to prove that there are more summer-killed than winter-killed trees. It is a good deal like a scabby calf that is born in the fall, lives through the winter and dies in the spring. A great many people say it is winter-killing when it really is summer-killing.

Mr. Elliot: Do you use any mulch besides clover?

Mr. Studley: Yes, every year. I use manure from the cow stable and horse stable.

Mr. Andrews: Do you mulch the entire surface?

Mr. Studley: Yes, sir.

Mr. Andrews: Do you mulch more about the trees than you do on the rest of the surface?

Mr. Studley: Yes, sir. I usually put about one-half of a good sized load around every tree. I usually mulch two trees with one load.

Mr. Andrews: Does the clover grow under the trees?

Mr. Studley: No, nothing grows under the trees.

Mr. P. J. Bentz (S. D.): Has any one had any experience with alfalfa in the orchard?

Mr. A. B. Lyman: We have had two small orchards seeded down to alfalfa for four or five years. I do not know whether to recommend it or not. One objection is that it being a high forage crop the dew stays on until almost noon and interferes with picking the apples, and then again it needs cutting three times in one season, and I do not care to go into the orchard as often as that.

The President: Do they still keep alfalfa in the Peterson orchard?

Mr. Lyman: Yes, it grows there still. I think it absorbs a lot of moisture that should remain in the orchard.

Mr. P. Clausen: Of what damage is fresh horse manure in an orchard? I know it is very bad for manure, but I know there are a good many people who use it for mulching. I do not know what damage it will do myself.

Mr. A. J. Philips (Wis.): I have used a great deal of it. The only damage it does is when you pile it two or three feet deep around a tree.

Mr. Radabaugh: It will kill a tree, and it will not take a very big pile either.

Mr. Clausen: It ought not to be piled right around the tree, but it ought to be spread out. I never could see that it did any damage if I spread it out around the tree, and we should not make a hotbed of it, but if it is spread out thin I do not think it will do any damage. If it is put in contact with the trees, of course, it will burn the bark when spring comes.

Mr. Radabaugh: Sydney Corp used to show the best fruit. I was in his orchard about the 10th of July. He said he could not attend any more meetings. What surprised me was the amount of fertilizer he had piled around his trees. Some was piled as high as two feet, and it was mostly taken from the hog pen. I asked him why he did not spread it out, and he said it was not necessary, it would take care of itself. He has about the finest fruit in Minnesota, and that was his method of mulching; and he seemed to make a success of it.

Mr. Geo. J. Kellogg (Wis.): We have a very successful orchardist in Dane county. His orchard is on clay soil and he practices what he preaches by putting on a mulch. That preserves the moisture.

A DESTRUCTIVE BEETLE—A WARNING TO NURSERYMEN AND OTHERS IN PLANTING WINDBREAKS.

PROF. F. L. WASHBURN, ST. ANTHONY PARK.

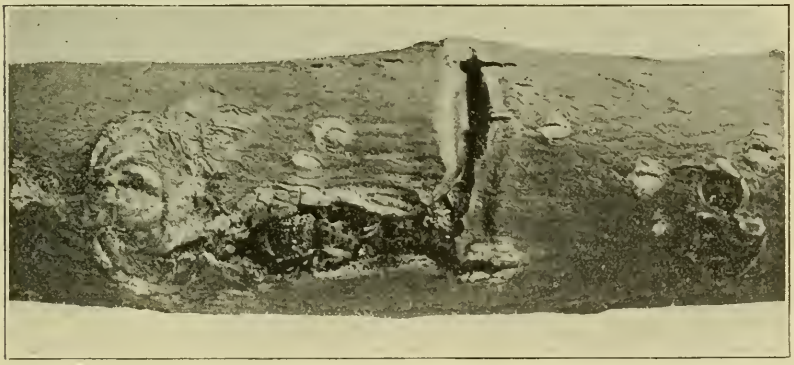
In a shipment of nursery stock which passed through Minnesota from New York state on the way to a party in North Dakota, a beetle introduced from England a good many years ago, known as the alder and willow beetle, *Cryptorhyncus lapathi,* Linn., has been found, and identified at this office. This shipment was accompanied by inspector's certificate in New York, and the Minnesota nurseryman accepting it in good faith has unconsciously contributed to our supply of noxious insects.

Previous to 1895 the beetle was confined to New York state, where it became exceedingly abundant and is today so prevalent that it would be practically impossible to eradicate it. But we are informed by the New York Department of Agriculture that it is possible to prevent the shipment of the beetle in nursery stock,

and that means will at once be taken to prevent a repetition of this oversight. In this particular case twenty-five Carolina poplars were killed in the shipment coming to Minnesota last spring. While this tree may not be an elegant shade tree from the standpoint of horticulturists, it is valuable as a quick grower and particularly at-

The willow beetle once and one-half enlarged.

tractive to those desiring windbreaks for this reason. This beetle attacks, as is evident from the above, this tree as well as willow, balm of gilead, poplar, alder and sometimes, it is claimed, the birch. In Massachusetts by destroying large numbers of balm of gileads and willows it seriously threatened the business of the nurserymen about 1898 or 1899, and a little later it was found in Ohio; now we have it in North Dakota and, probably, in Minnesota.



Work of willow beetle on Carolina poplar.

This beetle is dark brown, about half an inch long, with a long snout, belonging to the so-called snout beetles, or weevils, has a conspicuous white patch on the rear part of its back, and some whitish ones on its sides near its head. It makes a hole in the poplar stem or trunk, lays an egg therein, and the larva hatching bores under the back and later into the solid wood. Young nursery trees are easily killed by this pest. When only a branch or a stem is affected it can be cut off in June with the contained worm and burned with

the culprit inside. A good preventive to young stock in the nursery and elsewhere would be a whitewash on the trunks, containing a liberal allowance of paris green, applied two or three times during May and early June. Jarring the trees in May and June, in the morning, causing the beetles to drop upon a sheet below, is also suggested.

The entomologist considers the situation so serious that he is sending to nurserymen a statement that this beetle is hereafter to be included among the proscribed insects, and no nurseryman will be granted a certificate from this date in whose stock this beetle is found by the inspector. The accompanying photographs show the beetle once and a half enlarged, and also the work of the beetle on Carolina poplar.

THE FORWARD MOVEMENT IN HORTICULTURE.

C. S. HARRISON, YORK, NEB.

Beauty was ordained for the immortals. Because we have responsive souls, therefore the earth is clothed with loveliness, the plains are carpeted with green and sprinkled with flowers, bloom and fragrance clothe the trees in spring, and the fruits of autumn are dressed in crimson and gold, making them great bouquets of splendor. The earth might have been all gray or drab. Apple, cherry and plum trees might have been content simply to bear seeds like the ash or elm, instead of being wrapped with that delicious pulp and covered with delicate tissue whose tints and coloring are the despair of the artist.

What rapture inspiring scenes this earth presents! Moving mountains of amethyst and amber, with mingling of opal, escort the retiring day to his chambers in the west. Sublimity sits in the top of the mountains and the Aurora Borealis flashes her splendors on the northern sky.

Animals seem to take little note of beauty. In the early days I used to drive through God's great flower gardens of thousands of acres in Minnesota when waves of fragrance hung in the air; but my horse never cared—all he wanted was the sweet grass. He never noticed when the great artist was painting these marvelous tints on the western sky with those ravishing splendors fit for the portals of the eternal day. But I never can forget the transports of our firstborn when only a year old he saw a Minnesota sunset. It thrilled his whole being. How he gazed and gazed, threw out his hands toward it with unbounded glee. It seemed the first waking up of the soul.

This earth of ours with arch kalsomined with blue and sprinkled with stars, with its blossoms and gems, is a fit dwelling for those who are soon to stand on the shores of a marvelous inheritance.

Did you ever think that the universe is planned as a flower garden on a tremendous scale? When the Almighty drove his plow-

share through the fields of ozone he sowed the furrows with stars, each shining in beauty all his own.

As you stand a victor under the arch over which is written "All things are yours," and you are greeted as the children of a king with the salutations of the universe, you will look out on those landscapes and find them all planned with art and taste surpassing human thought. No two stars alike. One is an opal, another a ruby; there a topaz, and that one an amethyst; there is a turquoise and that monster ball is a diamond in full bloom. Higher up there is a chalcedony, and there is an emerald, and farther on is a sapphire. What a garden to bloom before us as the ages are marching by!

Rev. C. S. Harrison, York, Nebraska.

Such being our destiny we ought to pay more attention to the beautiful down here. We raise great crops to feed our bodies; we raise fruits to please our taste; we ought to raise something to feed the soul.

Minnesota—land of the sky-tinted waters—was a delightful land, one unbroken charm. Men came in and have robbed the state of its primitive beauty. Many have built homes which have been as carbuncles, blotches on the fair face of nature. This is simply cruelty to God. I used to wander delighted through the big woods to the north of us, and now right there you will find places where every tree and shrub has been cut away, and a lone, brown, weather beaten, unsightly house stands out in the desolation. Every home should

be an ornament to the landscape, matching the sky, the green of the earth and the trees. Every farm should be planned as a graceful, fitting framework and the buildings as a picture to fit the frame, fitted to the appropriate surroundings.

The great west, after years of struggle, has conquered the adverse forces and is prosperous, and now the horticulturist should preach the evangel of beauty everywhere, both by example and precept. He should branch out and test new things, and hold best that which is good.

In the office of the skilled architect there hang the plans and specifications of the monster building with its framework of steel. So over every farm in the land there hangs an ideal of what it should be, and the farmer should pull down the plan and work to it. Few men know what they can do or what is in store for them or the possibilities of that little empire of theirs, reaching down to the center of the earth and up to the stars.

In the air and earth, in the shower and sunbeam, which belong to them, are thousands of bushels of luscious fruit held in solution. Plant vines, bushes and trees, and the bounty of Providence will crystalize upon them. Also in this ideal there are marvelous scenes of loveliness—fair landscapes with their enchantments, flower gardens with the witchery of their beauty and a cheering procession of loveliness. So plant flowers and in the wake of your hoe and spade they will spring up to cheer you—before you a brown and bare patch of earth, behind you an Eden.

I am no pastor knight with more theories to give you. I work and am happy to be "the man with the hoe." The hoe instead of the implement of degradation is the wand in the hand of the King uncovering the secrets of nature, evoking forms of beauty from the unknown. For nearly thirty-five years in the great west I have been testing and experimenting, paying out thousands of dollars, finding what I could not do. Even our failures are some of the most valuable assets we have, and our successes, which are many, are the hope of the future. Some things will not succeed. Don't fool away your time with rhododendrons, azalias and kalmias, and things of that kind. They are exclusive, aristocratic easterners and will have nothing to do with us. You might as well try to transplant a Boston bred lady out on a great western prairie. I have tried that, too, and it don't work. But while we fail on many choice flowers, there are others extremely well adapted to our soil and climate which will do as well with us as anywhere on earth.

I love my work and my present parish. For forty-six years I have been a professional man, and my work not without results, my highest expectations realized. But I work now for the most appreciative audience I ever had, 30,000 paeonies alone in about 400 varieties. Thousands of phloxes, gaillardias, columbines and other perennials rise up to give me royal salutations. They never grumble or find fault. They are a cheerful, smiling company, and while I work among them there seems to thrill through my very being the ache and eagerness of the overshadowing love—anxious to reveal itself through my brain and hands to men. It is as though a voice

said, "Introduce me to the world! Let them know how much I care for them and what I would do for them."

The fact is, the good Lord never has had half a chance for a full revelation of himself to us. Develop his plans! Let the world know what reserves of beauty there are yet to be disclosed! Reach out and take your own, and you will find treasures fit for kings.

The possibilities of an acre of ground are simply astounding. Who has ever tried to see what he could do with an acre of rich land? Work it and miracles will spring out of it.

The farmer is partner with the Creator. The senior member of the firm furnishes the capital, the junior member does the work, and the result is garnered plenty. The devout man is amazed at the result of this co-operation, but kindly Mother Nature says, "There is more—still more."

In recent years there has been a movement for home adornment all over Christendom. The last fifty years have witnessed great gains in conservative England, in fact, all Europe. The world has been ransacked to adorn our eastern states. In the west there has been, up to date, more thought of cattle and wheat, hogs and corn than of the cultivation of the beautiful.

Why should not the farmer be rich? What does the rich man do, and how does he spend his money? He gets a piece of land and at great expense he fertilizes it and prepares it for planting. He gets an experienced gardener and pays a high price for trees, shrubs and flowers, and there is real wealth in those few suburban acres.

I have spent much time in parks and private grounds of the east studying this matter. Now the question comes up, "Why can't the farmer fix up his grounds? Is not his family as dear to him as the rich man's? Are not his sons and daughters as worthy?" Heaven help him if his boys are not far ahead of many of the young men who do not have either to think or work. Would not his family and neighbors appreciate a beautiful home? He has as good land as can be found. He has fertilizers at hand and does not have to pay $10 a cord for stable manute, as I have seen them do in the east. He has learned how to plant and care for trees. He has worked hard. Now let the boys bear the brunt awhile, and he give a little time to fixing up. He will find the ground ready to respond and hungry to show what can be done.

He can get a few books on horticulture and take some of the best papers. He need not be afraid to ask questions. Most horticultural editors are all loaded. The science is not a sealed one. It has no secrets. We do not take out patents on our inventions as others do. If in a twenty-mile ride he could visit some well laid out ground, as we find east, it would be a delight for him to do so. Well, he can have a Mecca of his own. Put one farm in Minnesota at its very best, and it would be the center of attraction for miles around. Fix up a whole section at its very best, and the fame of it would fill the state.

I want to emphasize this: *Work the gold mine in the front yard!*

What do you mean? On the Conney estate, at Methuen, Mass., there are some of the finest trees on earth. See that picea pungens

shimmering and flashing in the sunlight, dressed in royal robes of silver and sapphire! The owner would not take $100 for it. But your nurseryman will furnish you a small one with as fine a color for $2.00, and you plant it, and $98.00 worth of silver will spread out on those branches. Why, you can just plant money and have it grow.

On the famous estate of H. H. Hunnewell, at Wellesley, Mass., my attention was drawn to the most beautiful tree in the whole collection. It came from England and had a high sounding name, and it cost a large sum of money. I saw at a glance that it was simply the blue type of the concolor fir—our old friend from the Rockies. I had handled them by the thousand. Ultimately this tree will surpass the pungens. Would the owner sell that specimen for $200.00? No! he would not look at it, and would think himself insulted by the offer. Two dollars will buy a nice three-foot tree of that type, and there you have a lot of cash growing again.

I saw a Japan tree lilac thirty inches around three feet from the ground, and thirty feet high, with great spikes of glorious flowers looking at you from those leafy coverts. Would $100.00 buy it? But you can buy a nice one for $1.00, and it will grow to be of the same size.

I have a farmer friend in Nebraska. He is a Swede. I wrote him up as a German, and he went for me. Well, if I was a German I would be glad of it. If I was a Swede I would bless the land of Gustavus Adolphus. I have revolutionary blood throbbing in my veins, and I am thankful for that. Well, sixteen years ago my friend laid out $50.00 for paeonies, and he got some fine ones, and then he raised a couple of fine ones from seed himself, and they stand up with some of our best imported ones, and they now sell at 50 cents wholesale. I go 100 miles to see his collection. They are almost as fine as my own. Well, you ought to see that front yard. It would almost do for a portal to paradise, and he is now selling every year over $1,000 from that two acres, and every fall he has to shut down before the season is half over. He gets more cash out of his front yard and those flowers than from the rest of the farm. They are far ahead of corn and potatoes.

I know I could take two acres from many a western farm and get as much out of it a year as many a farmer does from his 160.

So plant wealth where it will grow, and how it will increase the value of the home! Take two farms; one has a hog lot in the front yard, and the other is fitted up with the highest taste and art. He is a poor farmer indeed who cannot add $1,000 or more to the farm value by adorning his grounds. Why not draw on all the sources of wealth instead of taking that everlasting lubber lift on wheat?

I have a friend who is a deacon in the church. I hope he will go to heaven when he dies. He is worth about $100,000. His cattle pens come up within a few feet of the door. And oh, the flies! the flies! I said to him, "Why don't you please your wife and move that fence back and plant the yard to trees and flowers? It is a good rich piece of ground, and it would add to your enjoyment and to the value of your farm."

"Oh," said he, "I am not interested in those things."

The patient wife is fighting flies in summer time, sickened with barnyard smells, and almost dying with longing for a beautiful home, which she ought to have. Now, I don't know what this man will do when he gets to "sweet fields beyond the swelling flood and never withering flowers." He don't care for flowers and there won't be any shorthorns up there, poor man!

I visited another man. He was president of an agricultural society. His wife was worn out and sick, and he, kind fellow, filled his front yard with sick pigs so they could sympathize with each other. No fresh papers or magazines in the house, only some agricultural reports. He showed me a fine field of alfalfa. "There," said he, "is all the flowers I want." He had added acre to acre—had 3¼ sections. The next I heard of them that noble wife was dead, a sacrifice to his cattle and hogs.

I will speak briefly of something we can use for home planting. Eastern experimenters are on the alert to find sports or variations among native trees. For instance, you may find a hardy weeping elm or one with very large leaves, or you may introduce new kinds. It is very expensive to get many rare trees from eastern nurseries, so I bought eighteen kinds of elms alone and then commenced grafting them on one-year-old seedlings, just as the nurserymen grafts his apples in winter. In this way you can test the newer sorts. Some are too tender, and some are all right. The Scotch elm is a noble tree with very small leaves. On its own roots it sprouts like a locust; grafted on native stocks it is all right.

For evergreens use your own as far as possible. Your northern white spruce is a fine tree. It is the same as the Black Hills spruce. Most of the Rocky Mountain conifers will do well. It is claimed that some of them, even the concolor, is not quite hardy enough. That may be because the seeds were gathered in the foothills. Understand that in the Rockies we have the temperate and the frigid zones. The picea pungens is hardy in Manitoba because its habitat is on the north side of the mountains, growing at an elevation of 9,000 to 10,000 feet above the sea level. The concolor, ponderosa and Douglas spruce are found growing with them at this elevation. So for the frozen north get seeds from the Rocky Mountain frigid zone.

The Engleman spruce is a tree of great beauty, but in southern Minnesota it sunscalds badly. In the northern part of the state it would do well, and it may come in play when you come to reforest your waste lands. It is the giant of the high altitudes. I wish you could try the aristata, or foxtail pine, and also the contorta, which grows all through the Yellowstone Park.

The pinus ponderosa is a grand and heroic tree. You will see it growing in some of the most bleak and forbidding places on the continent. It will cling to the brow of a precipice, waving defiance to cold and drouth. Sow the seed in the fall, and it will come up like peas in the spring and put on the extra set of leaves which makes it immune from the damps when the hot weather comes.

You will find the silver cedar, juniperus scopulorum, a very beautiful as well as hardy tree. There are some fine specimens up at

Paynesville, in this state, which I sent to friends years ago. The foliage is exquisite, and in winter it will sparkle with its frostings of silver.

Ornamental shrubs have a very important place. I will not dwell long on this, for I had an article in the last Northwestern Agriculturist on the lilac. There are now over 130 kinds of these fine shrubs, and here is a field for the enthusiast. If they never bloomed they would be worthy of a prominent place on account of their hardiness and striking leaf variation. The Ligustrina and Pekinensis have very fine and delicate leaves. While the Bretschneideri, the Emodi, the oblata and villosa have leaves very beautiful and striking. The time of flowering varies from early spring till the first of July.

One of the triumphs of modern horticulture is the introduction of syringa Pekinensis and syringa Japonica, lilacs that are trees. They grow about as fast and as large as our native ash. Japonica has a grayish white bloom, while Pekinensis has fine, pendulous branches and snowy white flowers, honey scented. This tree is very hardy. It has stood three consecutive years of terrible drouth in total neglect and thirty-five below zero. I now have about fifty kinds; all but one seem hardy and that may prove to be. It is the cut-leaved Persian. The foliage is exquisitely beautiful. Plant these in groups. A tree lilac in the center, then those of robust habit and on the outside those of slower growth. Then you have a long succession of bloom, a rich variation both of blossom and foliage.

I want to graft some of the late blooming bush lilacs on the trees, and see if I cannot start an entirely new race. If I don't live long enough, you try it.

Syringas, or Philadelphus.—Of these there is a numerous family, and I find them quite hardy. These can be raised from seed. Jackson Dawson, superintendent of Arnold Arboretum, of Boston, has some extra fine seedlings with great showy flowers. I keep about a dozen kinds. I should put these in groups.

There is a large French variety of immense snowy white flowers that hang in chains. These are very rank growers. I have had single stems grow ten feet in a season. Put these in the center, then grandiflora, next coronaris with crown-like bloom, then zeyhery, then Gordons, then Avalance and Lemoine, and surround the whole with the golden dwarf.

Spireas are not quite as hardy, and yet from twenty sorts I think you can select those that would do well here. I mention the hardiest in the order of blooming. The arguta is very early and is a snowbank of white, and in the fall they are resplendent in their autumn coloring, and the leaves hang on a long time. The next is prunifolia, or bridal wreath. Perhaps this is not hardy with you. Then comes the queen of all, Van Houtii, which propagates so readily from stools or cuttings—the easiest things to grow in the world. They are strong and robust and make fine hedges. Then we have the opulifolia with its wreath of foliage. It has a half globe for a flower; put two of them together, and you have a small baseball. This is a very strong grower. Put this in the center and cluster the others around it. I have perhaps a dozen other sorts, but they might not prove hardy.

Do not neglect the *viburnums,* or snowballs. There are over twenty of these, among which are your high bush cranberry and black haw. These with the old-fashioned snowball make a fine group, and they are also famous for their fine autumn coloring.

Perennial Flowers.—In the springtime the west is the busy end of the world, and we want to plant those things that will stay planted. Annuals require too much care. They cannot stand dry weather, not being so deeply rooted.

First you have pansies and tulips, then come the beautiful columbines. I should have a large bed of mixed ones. You have then almost infinite shadings of color. There are over fifty native sorts, and these planted together give you a perfect charm. They readily hybridize. The bumblebees seem almost intoxicated with the nectar, and they mix the pollen, and you are greeted with perfect surprises of beauty. You have here a succession of bloom lasting six weeks.

Oriental Poppies.—These are but little known. They are perennial, having roots like a small parsnip. They are hardy. I saw them growing without protection in a garden in the Yellowstone Park. They are flame color and of dazzling splendor; flowers often six inches across, and inside the most delicate penciling and tracery you ever saw. New varieties are now coming out, and there will doubtless be a great improvement.

Gaillardias.—These have flowers two and one-half inches across, petals brown edged with gold. They are wholesale bloomers—at it from spring till fall. The blooms are much used for cut flowers. Great improvements are being made. There are now some eighty kinds. In England they claim to have some with blooms five inches across, but I understand these highly improved ones are not hardy.

Then we have the queen of all the flowers, not excepting the rose—the modern paeony in 2,000 varieties. They are the hardiest, most prolific of all—wonderful in form and splendor, while over them hang billows of fragrance. By choosing different sorts you have six to eight weeks of bloom, and with care you can have them all summer.

Then we have the dazzling *phloxes* with rich variety. These commence the first of July to bloom and reach down to the hard frosts. You can so arrange it that when you look out of doors from early spring till late in the fall there will be a procession of beauty on dress parade.

The Future of Horticulture.—We are on the verge of great possibilities. Certain facts have been established and certain laws disclosed which give us data for the future. I confess I have been caught with the fascination and zest of new discoveries. After years of patient toil our native phlox, under the manipulation of European florists, has now become a marvel of splendor, and it has reached that stage where it is ready to launch out into new and marvelous developments. Already we have these with single blossoms an inch and a half in diameter. I get the finest foreign ones that money will buy and plant the seeds, and I have now quite a number which vie with the finest we can import. Columbines have a surprising variation, and soon those will be evolved which will be marvels of beauty.

There are now over fifty kinds of gaillardies, and new ones coming on all the time. We want more fall flowers; and in our mountains and on the plains we have more than forty kinds of asters alone. Let these be improved, and we have a beautiful after-frost flower.

Where a plant like the paeony gets beyond its first hybridization and becomes established, the florist is charmed by the constant surprises in store for him. There is the great Festiva Maxima and Floral Treasure—great hemispheres of loveliness six inches across; and on the other hand we have the delicate little Morning Star with its exquisite rays converging at the center. Among a thousand seedlings there may not be one you would throw away, but you usually find one among them that will be a glory. I know a lady in Indiana who has placed several new ones before the public. For one she received $150.00. I aided her in selling another for $100.00. So here is a field into which ladies can enter where there is both pleasure and profit.

Fruits.—Blessings on the patient toilers of the northwest who have moved the fruit belt 200 miles north—and they will move it further. What a discovery the Wealthy apple was! It is probably the most enormous bearer of all the trees in Nebraska.

I believe Minnesota will yet raise peaches. The Brownings of Illinois and Nebraska have been at work forty years, and now they have a peach that reproduces itself. Dr. Bailey, of Iowa, has been at work along that line. And this terrible year both these families of trees bore many crops.

I was shown a seedling peach at Beulah, Col. It was growing at an elevation of 6,000 feet. I have known frosts in June at that place that would kill the young oak sprouts back six inches, and that tree never failed for ten years. It was nearly killed when I saw it, by a fire. They wanted to know how to propagate it. I told them to plant the seeds. There is not another peach tree within thirty miles. So by watching these hardy sports and choosing the hardiest from them your children will raise peaches.

What advance has been made in plums? Father Terry, of Iowa, has given us fifty new and fine sorts. All you have to do is to keep on, and you will get there. Prof. Hansen will yet give us something to be thankful for in the improved sand cherry, and somebody will take the hardy buffalo berry and make a new fruit of it. It has been known to double its size under good cultivation.

I wish to mention two important adjuncts: one is the screen out in the open—there is too much wind and too much sun. Have a neat, tasteful screen of lath of any design you chose, and you have forest conditions so dear to many tender flowers. With mulching you can carry delicate flowers through, and when you are tired you can come in and have a visit with them.

A Farmer's Conservatory.—While in Massachusetts Mr. Parker, now superintendent of the finest of the parks of Hartford, Conn., showed a very economical plan he was then using. He had a simple grate furnace, and made and ran a prostrate flue from it around the building. The furnace was on one side the door and on the other

side the prostrate flue rose to a chimney which had a damper in it. No expense of furnace or boiler. The flue absorbed the heat, so if the fire went out the latent heat would serve. A cheap arrangement can be made by which the monotony of a long winter can be broken and the farmer can have flowers and vegetables at little cost. Dig down a few feet; have no windows on the north; use brush or attach a Russian hay stove to your plant, and there you are.

In closing I wish to put in a plea for *Women's Rights.* The sun never shone on a braver, nobler, more intelligent, self-sacrificing race of women than those of our mighty west. They have been in the advance guard as it has pushed ever westward. What long, lonely and weary years she has spent in humble quarters, sometimes in the house of sod or logs! With what infinite patience she has waited and hoped for a better day! Sometimes while about her work she has seen the painted faces of the Sioux warriors flattened against her windows, and she all alone with her little ones. Through what fears and alarms she has passed! But better days came; she made them come. But how at times she suffered from intense cold, from loneliness, lack of company and fresh literature!

What has been the result? Go to our great universities, our academies and colleges, and you see armies of such mothers' sons—the finest material morally, intellectually and physically the world has ever known, and they are fronting a momentous future now waiting for them, and they will make their impress upon it.

How these women have worked maintaining churches, Sunday schools, and encouraging education, religion and morality! They are uncrowned queens with influence as strong as if they wore diadems. Their pure, noble, untarnished lives have been among the richest assets of the nation.

Don't grudge one of these women or any farmer's wife an acre or two of the front yard while you have all the rest of the farm. Take care of this woman! She is a daughter of God. Let there be a soft carpet of green for her feet, plant for her every shrub and tree and flower that will grow; from early springtime till into fall let fragrant flowers rise up to bless her and worship her with their sweet incense. No goddess of fable so worthy as she for all the homage which nature and art can give her. Adorn the Beulah land which lies on the nether shore with something of the beauty which lies beyond.

SEED POTATOES SHOULD NOT SPROUT.—To give a reason for taking good care of seed potatoes: The first sprout is always the strongest and thriftiest one. If that is allowed to grow in a warm cellar or other place where seed is kept and is broken off at planting time, the eye will send forth two others but weaker ones. If these are broken off a third set of sprouts, still weaker, will grow. Thus, instead of one or two strong healthy stalks several weak ones will grow and the tubers will be small.

THE RED CEDAR.

C. S. KEY, ST. PETER.

Two years ago I joined the Horticultural Society, and in that short time I have learned more about horticulture than I had gained by experience in my former lifetime. I can now raise all sorts of trees from seed and do my own grafting successfully.

As to evergreens for hedges I know of none bettter than the red cedar. You can trim them in any shape you desire and not hurt them. They will thrive well in any kind of soil; they will bend to

C. S. Key, St. Peter.

the ground before they will break. The berries make good medicine for coughs and colds and will cure consumption in its early stage. The oil of cedar will kill rats and all sorts of vermin. The tree makes the best fence post that grows; they will outlast all other timber. Solomon used more cedar in the construction of the temple than any other kind of timber. The reason he used cedar, I think, is because it was stronger and more durable than any other timber. I have cedar trees that I planted twenty years ago. They bear seed every year, and in winter the birds come from far and near to get the berries. I am a lover of all kinds of evergreens, but I love the red

cedar the most. I was born in a log cabin, surrounded by large red cedar trees that my father planted long years ago on his Indiana homestead. If you will put red cedar shavings in your clothes chest the moths will never go near them. The honey bees love the cedar tree because they know they are moth-proof. If you can afford to make cedar hives for your bees you will never be troubled with moths. In my opinion they are the most profitable trees on earth. I raise evergreens from seed. The cedar I plant in the fall of the year, balsam and all sorts of pines in the spring. They want to be planted in the poorest land you can find. I planted some under forest trees, but they don't do so well as out in the open field. They must be shaded for two seasons. In winter I cover them with forest leaves, and then I throw some brush on top to keep the leaves from blowing away.

There are many reasons why I love the cedars. They break off the chilly winds of December and January and cool the hot south wind in summer. When I was a school boy I made bows and arrows out of red cedar, also torches to spear fish by. The cedar was used by the Wyandotte Indians in the Wyandotte Cave to make a light at a time when candles and kerosene lamps were unknown. The cedar will stand severe drouth and wet and cold, like the cedars of Lebanon will stand the storm and never die with old age as other trees do.

THE MINNESOTA FRUIT EXHIBIT AT THE WORLD'S FAIR, SEPTEMBER 1 TO 15.

The Minnesota exhibit at the World's Fair from Sept. 1 to 15, was very good. But as it was the last of the Duchess season, also the last of the cold storage fruit and Wealthy coming were somewhat immature, the exhibit rather needed the contributions of Patten's Greening, Okabena, Peerless, Hibernal, Charlamof, McMahon, University and others as early as they were sent in.

During the fore part of the season when the more perishable kinds were on the tables, it was necessary to have fresh shipments to replace them often. But from now on, as the Wealthy and other late varieties are ready for exhibition, the plates will not need to be replenished so frequently, and if parties sending fruit would heed your instructions to send nothing but the *best* and most perfect specimens, the exhibit would be kept up to its present standard and there would be quite a saving in express charges. There was a very creditable display of plums that attracted considerable attention and comment; also one shipment of grapes that helped out the exhibit very materially. J. P. Andrews.

SOME NOTES ON VISIT TO WORLD'S FAIR, SEPT 15. TO OCT. 1.

WYMAN ELLIOT, MINNEAPOLIS.

I was exceedingly well pleased with our Minnesota fruit exhibit on my arrival at Horticultural Hall at the World's Fair. When I saw what we had on exhibition and compared it with the exhibits from what are considered the great fruit states with the splendid backing of large appropriations, taking Minnesota with $5,000 for installation and sustaining an exhibit for seven months and comparing it with Missouri with $28,000 for installation and $50,000 for furnishing fruit for show purposes, it shows a wide margin. Our appropriation was not an amount sufficient to enable us to put first-class help in the field to select fine fruits for exhibition purposes. After seeing fruit that was sent forward for exhibition and noting in how many instances it was not up to the standard for first-class fruit, I am surprised that as good an exhibition was maintained by our assistant superintendent at the fair. Apples sent were often undersized, plums only medium in quality, grapes fine when started, but bad packing and hard usage in handling had broken the berries in nearly all bunches, and it was sometimes almost impossible to pick out even one creditable plate worthy of a premium. Express was in many instances paid on fruit that went into the dump or was given away as the easiest method to get rid of it. I do not wish to carry the idea that all of our fruit was of poor quality, for there were some fine samples furnished, that had been handled and picked with care and arrived in fine condition, giving credit to the growers and attracting a great deal of praise. Our Wealthy were highly colored and contrasted finely with University, McMahon and Northwestern Greening. For inspection by the judges perfect specimens were always sought out, though in many instances it was hard work to get fine, suitable, even-sized fruit worthy of a premium.

There has been some unjust criticism by some people of our own state that have never had experience in maintaining an exhibit of this character. The average visitor was very well pleased and gave many expressions of praise about our exhibit and expressed much astonishment that Minnesota could make so fine an exhibition of apples and other fruits.

The T. E. Perkins' seedling apples attracted considerable attention from northern fruit growers and horticultural scientists. There were 130 varieties represented, illustrating very plainly in this generation of seedlings the effects of cross-pollination. Owing to a hailstorm in July this exhibit was not as perfect as that shown

at Boston last year. This display to a large majority of visitors at Horticultural Hall did not appeal to them as being out of the ordinary routine of fruit exhibits unless their particular attention was called to it and a minute description was given illustrating the points of excellence and possibilities to be derived from making crosses when attempting to produce new and improved fruits by the seedling process. When this exhibit was put on the table we supposed it would hold good for six weeks at least, but the exceedingly warm weather, with a temperature of 85 to 90 degrees in the hall, caused many of the earlier kinds to decay at the end of two weeks' exposure. The remainder were repacked and sent to cold storage in Minneapolis for our winter meeting.

Prof. A. T. Erwin, the judge that passed upon this exhibit, was very much surprised to see the great number of good kinds resulting from this cross of five known pollens on the Malinda's blossoms, confirming his view of the possibilities of combining the good qualities by right manipulation of pollen from different varieties to produce apples of superior excellence with all the desirable points, such as habit of growth, hardiness, productiveness and keeping quality. He thought this was one of the most remarkable productions from natural pollination, giving us in the northwest great hopes for the benefits to be derived from the production of seedlings adapted to our climatic conditions and worthy of propagation.

Our second exhibit (the windmill) was a very unique and well arranged design, attracting the attention of all visitors to the hall.

The number of persons visiting Horticultural Hall was exceedingly small when compared with other exhibition buildings on the ground. There was much to interest and instruct any person who came to see fine fruit—a splendid place to see the fine varieties on exhibition and compare their form and color when grown on various soils under different climatic conditions and management.

MINNESOTA FRUIT EXHIBIT AT THE WORLD'S FAIR, OCTOBER 15.

FRANK YAHNKE, WINONA.

My time here has been too short to give a full report of our exhibit, and so I will only tell about my impression of it when I came here. There are 1,200 plates of apples and 90 plates of grapes in the Minnesota exhibit and all very fine fruit. We do not need to be ashamed of our exhibit. There are other states with larger exhibits, but they have only a few varieties. We have the finest Wolf River, N. W. Greening and the best apple seedlings. Our grapes are remarkably fine, which is shown by the fact that a judge one day

brought a man to our exhibit to show him the fine grapes grown in Minnesota.

I have not a full list of contributors of the fruit on our tables, but as far as I can remember them I will give them, and also the varieties contributed:

H. S. Rowell, Wealthy apples; J. A. Howard, N. W. Greening and McMahon White; Mrs. Isabella Burton, Excelsior, Wealthy; Frank Yahnke, Winona; G. A. Anderson, Renville; Jewell Nursery Co., Lake City; J. S. Parks, Pleasant Mounds; A. M. Miller, Harmony; Preston McCulley, Maple Plain; H. L. Crane, Excelsior, Minn.; A. A. Bost, Excelsior, Minn; A. Brackett, Excelsior, Minn.; William Oxford, Freeburg; C. W. Merritt, Homer, Peerless apples; Seth Kenney, Waterville; R. H. L. Jewett, Faribault; A. D. Leech, Excelsior; Jens A. Jensen, Rose Creek; Robb Bros., Winona, Wealthy apples; Andrew Wilfert, Cleveland, and C. L. Blair, St. Charles.

Some of the varieties of apples on the tables were: Wolf River, N. W. Greening, Wealthy, Yahnke, McMahon's White, Peerless, Malinda, Okabena, Newell's Winter, Patten's Greening, Duchess, University, Thomson's Seedling and Hibernal.

As I have not the list at hand I will not try to name the varieties of grapes.

I had not been with our exhibit five minutes when I noticed the people who were coming along stop at our large apples and say in astonishment and admiration, "Do these apples grow in Minnesota? They are so beautiful!"

Two gentlemen from Germany came to me and wanted to talk with me concerning our fruits. They were sent from their government to learn our ways of doing things. These men were astonished at how far we had advanced in the art of fruit growing. When we were talking about the price of fruit they said they were surprised that we sold fruit so cheap, for in Germany the best eating apples sell at fifty cents apiece.

The only objection I have to our exhibit is that the windmill does not stand at the same place the other exhibits do. This would make it grand and beat everything.

If trees need manure it may be put on at any time during the winter or toward spring. The quantity should be regulated by the condition of the soil and the apparent needs of the trees, as shown by the growth. If the manure is coarse the ground may usually be fairly well covered out a few feet beyond the ends of the branches, and if the trees are large no harm will be done if the entire surface of the ground is covered. The more strawy the manure the better it is for the purpose.

HANDLING AND PACKING EVERGREENS FOR DELIVERY.

ROBT. WEDGE, ALBERT LEA.

There is scarcely anything in the line of nursery stock which requires as careful and skillful handling as do evergreens. In digging them, in getting them to the cellar or shed (whichever the case may be), in grading them, in packing them and in keeping them after packing, it should always be borne in mind that we are handling trees with the leaves on and that there is a constant evaporation of moisture from these leaves. We scarcely ever think of moving, and much less of shipping, a deciduous tree with the leaves on. Of course, there is not as much evaporating surface on the leaves of evergreens, and yet there is enough to make it a delicate matter to transplant them successfully.

I shall only treat of the subject of how they should be handled after being ready to dig for the market, but it is just as important that they be grown in the proper way. It is a well known fact that evergreens which have been allowed to grow year after year without being cut under, as we call it in the nursery, which is really just a pruning or cutting back of the roots, are very difficult to transplant, as the fibrous roots, which are the roots that get most of the nourishment for the tree, are so far from the trunk that they are not retained in the digging. This is one of the main reasons why it is so difficult to get trees from the woods to grow when transplanted. These trees grown close together are weak and hard to make live.

The first thing is the digging. This is one of the hardest things to teach new hands, as it is very important that it should be done quickly and in the proper manner. The roots of evergreens, especially those of the pines, peel, break off and split very easily. Some new hands will pull the evergreens instead of digging them; others will cut them off near the surface; and still others—but these are few and far between—will take unnecessary pains. These points should be thought of in the digging:

1. Evergreens should be dug, not pulled.
2. We should be careful and not injure tops.
3. If there are hard lumps of dirt left on the roots which will not shake off easily, as is often the case in clay soils, they should be crushed, for if they are shaken off they will take some of the fibrous roots with them.

4. The roots should not be exposed but should be immediately covered with burlap or other material. Of course this will not be necessary on a rainy day, as is often the case in the spring.

Then after the digging comes the carrying of the evergreens to the cellar. They should be carried in as fast as dug, kept covered, and sprinkled as soon as they reach the cellar or, better yet, sprinkled as soon as dug.

Then there is the grading, which should not be done in a dry or sunny place. It may be done in the shed if the air is damp, but the cool, damp cellar is the better place, although it is a little dark and a disagreeable place for the men to work.

After they are graded they are put in boxes or stalls. These should be in a damp, cool place, and the roots of the evergreens kept sprinkled every little while. The diggers and graders should never get so far ahead of the packers that the evergreens will be left in the stalls any great length of time.

Then there is the packing which requires a good deal of care. The tops of evergreens should not be packed tightly, as they will heat just like so much green grass piled together, while the roots should be done up in as near an air tight package as possible. It is desirable to have some sort of lever or press to get the packages tight, and it is absolutely necessary in making long shipments or where a quantity is packed to put followers in the boxes, never more than one foot apart for the larger sizes and six inches for the smaller, as the boxes are often thrown on their ends by the freight handlers, and thus the evergreens are forced from their places unless tight. There are few points more important, as we have found to our sorrow in receiving shipments from other nurseries.

It is difficult to tell how the packing should be done. Every nurseryman has his own way of packing and his own packing material, and I don't know as any one feels entirely satisfied with his way. Even the best and most carefully managed nurseries will occasionally get off shipments that are defective in their packing. There is yet much to be learned in this line, and many simple machines and devices may be made to save time and expense.

THE SELECTION OF SEED POTATOES.

WM. SANDROCK, HOUSTON.

My experience in selecting potatoes for seed dates back to the year 1878. At that time I read an article in some agricultural paper on plant breeding, and I thought I would try the potato. I did so and with better results than I expected to see. Soon after this a neighbor tried the Burbank Seedling, which he thought could not be beat, so gave me a few pounds for trial. I planted them and selected my seed from them in the fall, and had a fine yield the following year. Only a few years afterwards this same man that gave me the Burbanks came to me for seed potatoes. He lost most of his through his cellar freezing. The following fall he came to me to ask how I could account for the difference in the yield. He claimed my seed of the same variety as his own yielded twice the amount, though they were planted side by side. I told him it was all in selecting the seed; also my way of selecting it. That fall and the next spring most of my neighbors wanted to change their potatoes for planting. They had all kinds of excuses for making the change, and they bought their seed potatoes from me, though they could have got them cheaper elsewhere. Often after that when potatoes were, so to say, "a drug in the market," the neighbors would feed theirs out in the spring and come to me for a new start. I had no trouble to get from five to twenty-five cents per bushel above market price, right at the house, and think I was well paid for the little trouble I took in selecting seed. I will state here that I have gone out of this business since a few years, only raising enough for my own use, none to sell.

Now as to selecting the seed, next spring select your potatoes in your own way, cut them so as to have two or three eyes on a piece, plant only one piece in a place thirty-six inches apart each way. Next fall dig your potatoes with a long handled mining shovel, or a potato fork, putting two rows together. Now when you find a fine hill put it to one side, and so on through the field keep your finest hills apart from the other potatoes, each hill by itself, till you are ready to pick them, then examine these hills, do it yourself (don't leave it to the hired man, unless he has more interest in the matter than you have). Should you find any potato in aforesaid hills that you would not care to plant, throw the whole hill with the crop, and be careful to save only hills where every potato is fit for seed. Should

you come across an extra fine hill, keep that entirely separate from the rest, and you can grow your seed hills from that next year. Keep on this way year after year and you will more than double the yield. They will also be less subject to blight and rot. Give it a trial, at any rate.

CONTRIBUTORS OF FRUIT, ETC., TO MINNESOTA FRUIT EXHIBIT, WORLD'S FAIR.

June 15. Jewell Nursery Co., Lake City, peonies.
17. D. C. Webster, La Crescent, 16 quarts Warfield strawberries.
22. Jewell Nursery Co., 48 quarts strawberries: Bederwood, Ridgeway, Black Joe, Warfield, Dunlap, Splendid, Clyde.
23. Harris & Welch, La Crescent, 16 quarts Warfield strawberries.
23. Wyman Elliot, Excelsior, 48 quarts strawberries: Warfield, Splendid, Clyde, Sample, Brandywine. Twenty-four quarts of these were from A. Brackett.
23. Clarence Wedge, Albert Lea, 40 quarts strawberries: Bederwood, Warfield, Clyde.
23. C. A. Sargent, Red Wing, 24 quarts Warfield strawberries.
23. Mrs. Ida M. Kingsley, Stewart, 16 quarts strawberries, one box peonies.
23. Clinton Falls Nursery, Owatonna, 2 boxes carnations.
23. A. H. Wright, Owatonna, 2 boxes peonies.
24. Clarence Wedge, Albert Lea, 25 quarts strawberries: Splendid, Johnson's Early, Warfield, Clyde.
24. Jewell Nursery Co., 48 quarts strawberries: Splendid, Clyde, Warfield, Lovett, Enhance, Bederwood, Black Joe, Haverland, Ridgeway, Dunlap.
24. Clinton Falls Nursery, Owatonna, 48 quarts strawberries: Bederwood.
24. W. S. Widmoyer, Dresbach, 6 quarts Early Richmond cherries; 6 quarts strawberries: Sample, Marshall, Warfield and seedling.
28. H. W. Shuman, Excelsior, 48 quarts strawberries: Challenge, Clyde, Marie, Miller, Parson's Beauty, Strahelin, Oom Paul, Uncle Jim, Klondike, Pokemoke, Dunlap, Minute Man, Bederwood, Livingstone, New York, Sample, Aroma, Warfield.
29. John A. Fairley, Faribault, 48 quarts strawberries: Bederwood.
29. H. J. Baldwin, Northfield, 24 quarts strawberries: Warfield.
29. A. Schlemmer, Chisago City, 24 quarts Challenge strawberries.
29. Clarence Wedge, Albert Lea, 36 quarts strawberries: Clyde, Challenge, Warfield, Dunlap, Crescent, Lovett, Splendid, Brandywine, Johnson's Early.
30. F. F. Farrar, White Bear, 8 quarts strawberries.
30. B. P. Christenson, Hutchinson, 16 quarts strawberries.
30. Fred Mohl, Adrian, 16 quarts strawberries.
30. I. W. Wood, Wayzata, 12 quarts strawberries.
R. H. L. Jewett, Owatonna, 48 quarts of seedling strawberries.
July 1. Frank Yahnke, Winona, 8 quarts cherries: King's Morello.
1. North Star Plant Farms, Cokato, 16 quarts strawberries: Brandywine, Splendid, Minute Man.
1 Clarence Wedge, Albert Lea, 36 quarts strawberries: Bederwood, Clyde, Crescent, Warfield, Dunlap, Splendid, Lovett, Brandywine, Johnson's Early.
July 2. A. Brackett, Excelsior, 48 quarts strawberries: Parker Earle, Brandywine, Lovett.

July 4. Clinton Falls Nursery, Owatonna, 48 quarts strawberries: Bederwood, Warfield.
4. R. L. Baillif, Bloomington, 16 quarts Warfield strawberries.
5. Clarence Wedge, Albert Lea, 36 quarts strawberries: Bederwood, Crescent, Clyde, Lovett, Challenge, Warfield.
5. Charles Clarke, Owatonna, 48 quarts strawberries: Splendid, Bederwood.
6. G. A. Anderson, Renville, 8 quarts Warfield strawberries.
7. R. H. L. Jewett, Faribault, 48 quarts strawberries: Edgar Queen, Sheppard, seedling.
J. P. Johanson, Excelsior, 16 quarts strawberries: Gandy, Dunlap, Johnson's Early, Sample.
9. Frank Yahnke, Winona, 16 quarts Homer cherries.
9. Hinckley Fruit and Vegetable Growers' Association, 16 quarts strawberries: Brandywine.
11. H. W. Shuman, Excelsior, 72 pints Marlboro raspberries.
11. Frank Yahnke, Winona, 16 quarts currants: Fay's.
11. H. G. Westman, Sandstone, 16 quarts strawberries.
12. Fred Mohl, Adrian, 16 quarts gooseberries: Downing.
13. Frank Yahnke, Winona, 16 quarts Homer cherries; 16 quarts gooseberries: Downing, Pearl, Houghton.
Frank I. Harris, La Crescent, 24 quarts raspberries—18 red, 6 black.
Rose Hill Nursery, Minneapolis, 8 quarts gooseberries: Champion; 8 quarts currants: Wilder.
F. B. McLaren, Wrenshall, 24 quarts strawberries: Bederwood, Warfield.
H. G. Westman, Sandstone, 24 quarts strawberries: Glen Mary, Enormous, Warfield.
14. Minnesota State Reformatory, St. cloud, 16 pints gooseberries and currants.
W. S. Widmoyer, Dresbach, 6 quarts Wragg cherries; 4 quarts Montmorency cherries; 2 pints Marlboro raspberries; 2 pints Gregg; branches of choke cherry.
15. F. J. Butterfield, Long Lake, 24 pints Marlboro raspberries.
A. McComber, Duluth, 48 quarts strawberries: Crescent and seedlings, 2 varieties.
16. Rose Hill Nursery, Minneapolis, 16 quarts gooseberries: Red Jacket; 16 quarts currants: Red Dutch.
16. Clarence Wedge, Albert Lea, 24 quarts raspberries: Older, Turner, Loudon, Caroline.
June 17. A. A. Johnson & Co., Sebeka, 16 quarts blueberries.
F. B. McLeran, Wrenshall, 24 quarts strawberries: Enormous and Dornan.
18. Clarence Wedge, Albert Lea, 36 quarts raspberries: Older and Loudon.
R. H. L. Jewett, Faribault, 6 quarts gooseberries, 2 quarts seedling strawberries, 40 quarts currants: Red Dutch, White Dutch. (A list of the fruit contributed from June 18 to Sept. 20 was published in the October number.)
Sept. 20. Jewell Nursery Co., Lake City, 1 box Weaver plums.
Sept. 19. Seth Kenney, Waterville, 1 box Wealthy.
Sept. 19. H. L. Crane, Excelsior, 15 baskets grapes—Moore's Early, Delaware.
Sept. 19. E. H. Thompson, Excelsior, 3 baskets Moore's Early.
Sept. 19. Dewain Cook, Jeffers, 24 quarts plums.
Sept. 20. J. A. Howard, Hammond, 1 barrel Okabena, Peerless, Longfield, Wealthy, Charlamoff.
Sept. 20. M. Oleson, Montevideo, ½ bushel plums—Desota.
Sept. 20. R. Parkhill, Chatfield, 2 boxes Wealthy and Patten's G.
Sept. 20. E. D. Fisk, Chatfield, 1 box Hibernal.
Sept. 20. C. A. Murphy, Chatfield, 2 boxes Wealthy, Golden Russet, N. W. Greening, Patten's G.
Sept. 20. W. Ferguson, Chatfield, 1 box Wealthy.

Sept. 20. J. Gasper, Chatfield, 1 box Wealthy.
Sept. 20. Unknown, Chatfield, 1 box Wolf River.
Sept. 21. D. C. Hazelton, Cutler, 1 box Martha crabs.
Sept. 22. Dewain Cook, Jeffers, 48 quarts plums—Hawkeye, Wolf.
Sept. 22. O. W. Moore, Spring Valley, 2 grape baskets plums—Surprise, Stoddard.
Sept. 22. Victor Neil, Minneapolis, 1-3 bushel seedling apples.
Sept. 22. Frank Moeser, Minneapolis, 6 pints raspberries—Shipper's Pride.
Sept. 22. P. C. Christensen, Fairmount, 6 baskets Concord.
Sept. 22. Martin Penning, Sleepy Eye, 8 quarts plums—Hawkeye, Stoddard, Brittlewood, Surprise, Wyant, Comfort.
Sept. 23. R. H. L. Jewett, Faribault, 1 barrel Wealthy.
Sept. 24. Isabella Barton, Excelsior, 1 box Wealthy.
Sept. 24. Charles Blair, St. Charles, 1 box Peerless.
Sept. 24. Alfred O. Hawkins, Excelsior, 16 quarts plums.
Sept. 26. J. A. Howard, Hammond, 2 barrels apples—1 Wealthy, 1 McMahon and Duchess.
Sept. 20. R. L. Bailiff, Bloomington, 2 baskets grapes—Delaware and Concord.
Sept. 26. Unknown, 4 baskets grapes.
Sept. 26. Jens A. Jensen, Rose Creek, 1 box apples—Malinda.
Sept. 27. O. W. Moore, Spring Valley, 2 boxes apples—Wealthy and Peerless.
Sept. 27. John C. Sommers, Northfield, 1 box Longfield.
Sept. 27. A. Brackett, Excelsior, 2 baskets apples.
Sept. 28. H. H. S. Rowell, Excelsior, 2 boxes Wealthy.
Sept. 29. C. W. Merritt, Winona, 1 box apples.
Sept. 30. Louis Anderson, Rochester, 4 plates seedling apples.
Sept. 30. Leonhard Fritze, Claremont, 1 box Peter and Wealthy.
Oct. 1. C. W. Johnson, Judson, 1 small box Miner plums.
Oct. 1. H. L. Crane, Excelsior, 21 baskets grapes—Concord, Delaware, Moore's Early.
Oct. 1. C. O. Alsaker, Beardsley, 1 box apples.
Oct. 1. E. H. Thompson, Excelsior, 1 box Wealthy.
Oct. 2. Preston McCulley, Maple Plain, 2 boxes apples—1 Wealthy, 1 Patten's Greening.
Oct. 2. Robb Bros., Winona, 2 boxes apples—1 Wealthy, 1 Minnesota Spy.
Oct. 2. Jewell Nursery Co., Lake City, 1 small basket seedling plums.
Oct. 3. H. L. Crane, Excelsior, 10 baskets Concord.
Oct. 4. A. L. Goldenstein, Lake Crystal, 3 boxes Wealthy.
Oct. 4. J. A. Howard, Hommand, 1 barrel Wealthy and N. W. Greening.
Oct. 5. J. A. Howard, Hammond, 1 barrel Harding, Patten's G., Scott's Winter, Newell's Winter.
Oct. 7. William Sandrock, Houston, 3 boxes Wealthy.
Oct. 7. S. H. Drum, Waseca, 1 box Peter.
Oct. 7. A. Brackett, Excelsior, 2 crates Concord grapes.
Oct. 7. C. W. Merritt, Winona, 1 box apples.
Oct. 8. Mrs. R. H. Wilcox, Elysian, 1 small box Peerless and Wealthy.
Oct. 10. H. L. Crane, Excelsior, 9 cases grapes—Duchess, Concord, Iona, Brighton.
Oct. 10. Frank Yahnke, Winona, 1 barrel N. W. Greening, Winter King, Wolf River.
Oct. 10. J. S. Parks, Amboy, 1 box Wolf River.
Oct. 10. G. A. Anderson, Wolf River and Wealthy, small box.
Oct. 10. James F. Clark, 1 small box apples, about 5 plates.
Oct. 14. A. M. Miller, Harmony, 1 box N. W. Greening.

ASPARAGUS is a crop which requires permanence, as it cannot be sown and harvested the same year. A good way to raise asparagus in the garden is to have one long row. If it can be by the fence, so much the better; then its roots can feed on both sides. The soil in which it is planted should be enriched by a liberal supply of well-rotted manure. Plow the ground if possible or spade it up, making a trench a foot deep. Be sure your plants are of the ight sort. Procure them from a reliable nurseryman.

Secretary's Corner.

The Best Minnesota Wealthy at the World's Fair.—As far as heard from the best plate of Wealthy from this state shown at the World's Fair was contributed by Mr. C. W. Merritt, of Winona. We ought to have a fuller description of this plate of apples, but so far it has not come to hand.

Practical Assistance for Tree Planters.—The United States Department of Agriculture has issued a number of bulletins giving hints for the practical assistance of tree planters, which can be had of the Department upon application. Circulars number 21, 22 and 23 bear expressly upon this subject. Address the Bureau of Forestry, U. S. Department of Agriculture.

A Good Blackberry Yield.—Mr. W. E. Fryer, of Mantorville, in a recent letter says, "This season I have picked 1450 quarts of blackberries on six rows eighteen rods long, and four of the rows I planted in the spring of 1903, and between the rows of apple trees in the orchard at that. Apple trees twenty-one feet apart between the rows, with two rows of blackberries between each two rows of trees."

Honors for Prof. Samuel B. Green.—Prof. S. B. Green has received the highest award at the World's Fair, denominated the "grand prize," for his work in planning and installing the collective exhibit of horticulture and forestry for the agricultural colleges and experiment stations of the country. A gold medal has also been awarded to the exhibit of the horticultural department of the University of Minnesota. These exhibits are to be found in the Educational Building.

Apple Day at the World's Fair.—According to the report of the assistant superintendent in charge of the Minnesota fruit exhibit at the World's Fair, five barrels of Wealthy apples were contributed towards the distribution of apples which took place on that day. Mr. A. W. Sias, the poet of the society, under the nom de plume of "Sam Bucus," celebrates this day in rhyme, which will appear in the next number of the Horticulturist.

Removal of W. S. Widmoyer.—Members of the society who are acquainted with Mr. W. S. Widmoyer, who has resided for many years at Dresbach, Minn., will regret to know of his removal from the state to Missouri, where he is to engage on a large scale in orcharding. (The writer is one of those who believes that there is as much money to be made in raising fruit in Minnesota as anywhere else.) Mr. Widmoyer was a successful fruit grower here, and we expect to hear of his prosperity in his new home. His address is Seymour, Mo.

Delegates at the Annual Meeting.—Appointments of delegates from adjoining states to our annual meeting as far as announced are Prof. F. Cranfield, secretary of the Wisconsin State Horticultural Society; and Prof. A. T. Erwin, Horticulturist at the Iowa Experiment Station, to represent the Iowa Society. Prof. N. E. Hansen, secretary of the South Dakota State Horticultural Society will be here as usual, but I understand some other member will be the formal representative.

BULLETINS ON HORTICULTURE FROM THE SOUTH DAKOTA EXPERIMENT STATION.—Prof. N. E. Hansen, horticulturist at the South Dakota station, has issued during the past year three bulletins on horticultural topics, one on "Early Garden Peas," another on "Breeding Hardy Fruits," and a third on the "Western Sand Cherry." The two last named will be of large interest to the fruit growers of our state. Copies can undoubtedly be secured by addressing Prof Hansen at Brookings, S. D. Both of these bulletins are well illustrated and go very much into detail as to the work in improving fruits that is being done at the South Dakota station.

THE CONVENTION OF HORTICULTURAL SOCIETIES.—This gathering together of the officers of the state horticultural societies of the country was held, as announced, on Oct. 26th in Horticultural Hall at the World's Fair. No report of the meeting is yet at hand. Mr. Frank Yahnke, of Winona, who is at this time assisting at the Minnesota exhibit at the fair, presented the first topic to the meeting, "How to Increase the Membership of a Horticultural Society." Mr. Yahnke has had an opportunity to watch the process in Minnesota and is well qualified to speak on the subject.

A. H. REED AND THE MCLEOD COUNTY HORTICULTURAL SOCITY.—Captain A. H. Reed, of Glencoe, one of the enthusiastic workers in this society, has during the past year succeeded in organizing a local society in his vicinity, called the McLeod County Horticultural Society, with a membership of nineteen who have joined the organization as a result of his personal solicitation. There ought to be an organization of this kind in every county of the state, and there would be if in each county there was a member with the degree of zeal and impulse for service shown by Captain Reed.

BRINGING OUT THE APPLE SEEDLINGS.—"A good way to bring out the seedlings in the state is for the county fair managers to offer liberal premiums on seedling apples.

"At our recent county fair nine premiums were offered on seedlings,as follows: three premiums from three dollars down on sour winter apples, three premiums from three dollars down on sweet winter apples and three premiums from three dollars down on fall apples. As a result about thirty seedlings were exhibited, and out of the lot about twenty were from trees sent out by Mr. Gideon many years ago. The farmers here are sufficiently aroused so that every road-side tree is being watched and now and then one transplanted to the home grounds." L. P. H. Higby, Sec'y So. Minn. Hort. Soc'y.

GREEN'S VEGETABLE GARDENING AS A PREMIUM.—This very practical work on vegetable gardening by Prof. Samuel B. Green is now offered with a substantial paper binding at a price that the horticultural society can afford to give it as a premium in connection with the securing of new members to the society. Any member sending in a new member for the year 1905 may now receive a copy of this book. It occupies the same field as regards the growing of vegetables that "Amateur Fruit Growing" does to growing fruit and will be found of equal value. to those interested in this subject. A copy can be purchased of the secretary also for $ .50 postpaid.

FRUIT EXHIBIT AT THE ANNUAL MEETING.—It is the ambition of the officers of the horticultural society to make the fruit exhibit at the coming annual meeting the largest ever shown at any of our gatherings, and judging

by the fruit now in storage it seems likely to be so. With the co-operation of the members it can easily be brought about. Members attending the meeting are urgently requested to make all the entries possible in every class. In some cases the premiums have been slightly increased over last year, and a number of special premiums are being offered as additional inducements. To make the best exhibit we have ever made, however, is sufficient inducement to the members to bring about the best results.

SEEDLING APPLES AT THE WINTER MEETING.—As last year, an even $100 00 is offered for premiums on seedling apples at the coming annual meeting of this society, to be divided pro rata amongst the exhibitors of seedlings possessing commercial value. Entries in this class may be made from western Wisconsin, northern Iowa, North Dakota, South Dakota and Manitoba. We hope for a full display of the seedlings of the northwest. The seedling apple exhibit last year was the most interesting part of the splendid fruit display made at the meeting. No exhibitor within these limits is barred, and the fact that seedlings have been shown and taken premiums previously will not interfere with their being exhibited and taking premiums again this year. Bring out all of the good seedling apples.

PROGRAM OF ANNUAL MEETING.—The program of the annual meeting of this society, to be held in Minneapolis December sixth to ninth, four days, is now practically complete and will go to the printer Nov. 1st, to be ready for mailing to the members Nov. 15th. The sessions will be held in the Unitarian Church, where we were so splendidly accommodated last year. The acoustic properties of the audience room are almost perfect, and there is no difficulty in hearing members in any part of the hall. As the fruit room is on the floor below there is no confusion or noise from this source to interfere with the interest of the meetings. Look over the program and see what you are specially interested in and plan to be there in attendance that particular session or, better still, come Thursday morning and stay till Friday night—and above all things don't miss the society banquet, to be held Thursday evening. Everything points to the fact that this will be the most popular and successful gathering the Minnesota society has ever held. Hotel Vendome will be as heretofore the headquarters of the members. A room can be engaged beforehand for the meeting if desired.

RED CEDAR AS A CAUSE OF RUST ON WEALTHY APPLES.—In a letter from Prof. Wheeler of South Dakota, he states that he recently visited an orchard in that state and found the Wealthy trees very badly affected by rust, although other varieties appeared to be quite healthy. He also states that there are a large number of junipers (red cedar) on that place, and he thinks they are probably responsible for harboring the disease, as they are thickly covered with cedar apples, and many of them are dying as the result of this disease. This is interesting from the fact that the Wealthy is never seriously injured by leaf rust in this section, nor are any of our apples seriously injured in this way except in special locations.

It should be more generally known that the fungus that causes the rust on apples passes one stage of its life on the red cedar, where it produces swellings which in the late spring or early summer push out long, gelatinous, scarlet horns, often two inches long, and these are very conspicuous in such trees. In some parts of the country the only way of getting rid of rust has

been to destroy the red ceder. It is possible that some of the readers of the "Horticulturist" are troubled in this way, and have seen this peculiar growth on the red cedar and have not known what it was.

In a long trip this was one of the few places in which Prof. Wheeler found the Wealthy rusted. It was also one of the few places in which red cedar was very abundant. PROF. SAMUEL B. GREEN.

THE MINNESOTA FRUIT EXHIBIT AT ST. LOUIS.—The Minnesota fruit Exhibit at the World's Fair is being well maintained. A very full assortment of nearly all the varieties of fruit grown in Minnesota have been displayed there in their proper season. At the present writing, October 24th, the only fruits being shown are grapes and apples, including a large number of varieties of each. The grapes are being sent down from cold storage in Minneapolis, where sufficient quantities are being held to maintain the exhibit until the close of the fair, on December 1st. The apples being used are sent in part from Minneapolis cold storage and part of them from the cold storage at the home of J. A. Howard, of Hammond, and some are being held in cold storage at St. Louis. There are something like sixty bushels of apples in storage for this purpose, most of which fruit is very fine indeed. Judging by the reports that come to the writer from those visiting the fair, for the size of the exhibit Minnesota is making as fine a display as any other state showing in Horticultural Hall. Prof. S. B. Green writing from St. Louis under date of Oct. 12th says of the exhibit, "The exhibit is exceedingly creditable and elicits much favorable commendation from visitors and judges. Those fine Wolf River from Yahnke are especially good." Mr. Redpath writing under the same date says, "I think our fruit is fine and attracts as much attention as any in the hall."

Inquiries are coming in as to what medals have been awarded to Minnesota exhibitors on fruit. I understand that some awards have been made, but the judges are keeping this information until about the close of the fair, when the purpose is, I believe, to give it out all at one time. This is what I learn in regard to it.

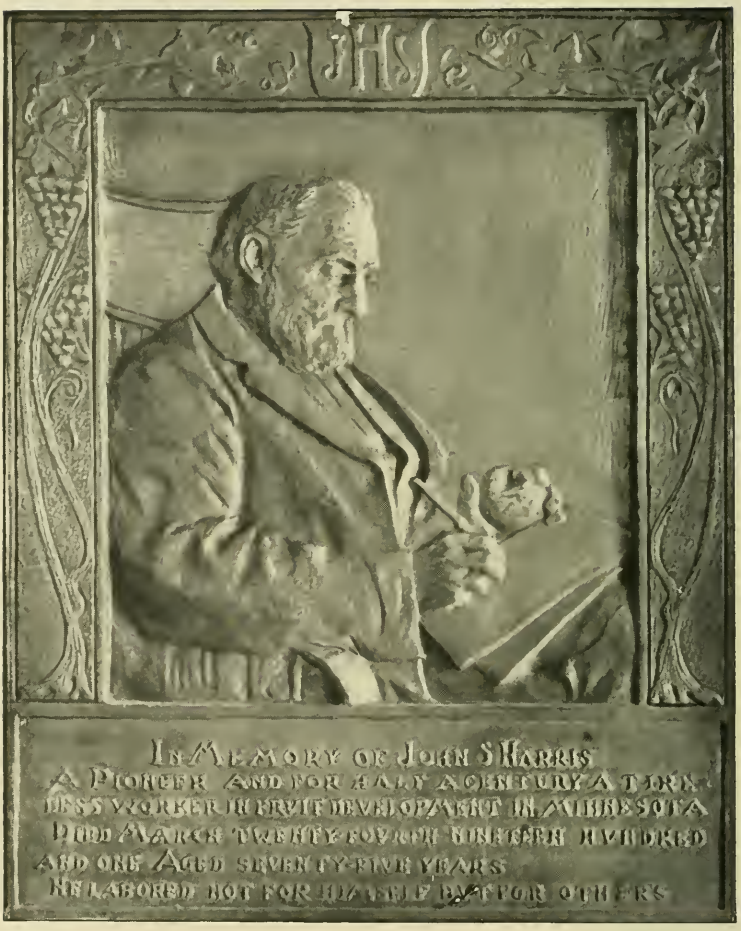
The windmill exhibit of the Jewell Nursery Company at the state fair, which was transferred from there to the World's Fair, has been completed some weeks and is, of course, attracting a great deal of attention. An electric motor has been put in to run the sails, so that it is now in complete working order.

N. B.—Since writing the above a letter from Mr. Redpath dated Oct. 24th says, " We received this morning thirty-two quarts of cranberries. They are as fine as I ever saw. Eight quarts of them are on the vines tied into bunches. The people admire our fruit and tell us it is the finest in the hall.

GROWING TREES ON THEIR OWN ROOTS.—I saw an inquiry as to whether any one here was growing trees on their own roots, etc.

I am in an experimental way and have some Early Strawberry, Sweet Russet Martha, Virginia and Wealthy trees grown by the layering method. I just bend down a limb that is near enough to the ground and place it in a hole about eight or ten inches deep. The limb must be long enough so the tip comes to the surface of the ground again.

They are very fine trees except the Wealthy and Martha, which do not root readily. I shall report when these trees come into fruiting. Am highly pleased with the method so far and think it is the cheapest and easiest way to grow them, especially those that root readily. Haven't succeeded in rooting plums yet. A. T. MCKIBBEN, Ramey, Minn.



BRONZE MEMORIAL TABLET, ERECTED IN MEMORY OF JOHN S. HARRIS IN HORTICULTURAL HALL, MINN. STATE EXPERIMENT STATION.

THE MINNESOTA HORTICULTURIST.

VOL. 32. DECEMBER, 1904. No. 12.

THE JOHN S. HARRIS MEMORIAL TABLET.

S. M. OWEN, CHAIRMAN, MINNEAPOLIS.

Mr. President, I will not talk very long, because it will not take nearly so long to tell about what we did as it took to have it done. You will remember, perhaps, that a year ago the entire sum that was received in the purchase of tickets for the usual banquet of this society was devoted to the purchase of a memorial tablet to the late Mr. Harris. The Farm, Stock and Home Company paid the entire cost of the banquet, which left in the hands of the treasurer $110. It was believed that for this sum a simple tablet could be procured that would contain a medallion portrait of Mr. Harris, but the committee was unable to find an artist in Minneapolis or St. Paul who could model the medallion in a satisfactory manner, and subsequently we found, and largely by reason of great good luck, that we could possibly get a bronze tablet, which would be very much preferable if we could get it, because the bronze is nearly indestructible, it would go through a hot fire without injury—so it would be a more lasting tribute. The expense of a bronze tablet is very much greater, as a rule, but fortunately we found a lady in the city who, although she is classed as an amateur, has a wonderful aptitude for modeling in clay. Mrs. Backus, the lady in question, took a very small snapshot picture of Mr. Harris that gave a profile view of him. This little picture was about 2½x3½ in. in size, and very indistinct, and from that picture Mrs. Backus made the model in clay which you see in bronze here today. It was a remarkable piece of work, and if we had not been so fortunate as to secure this lady to do the work it would have cost very much more money than it did cost us.

We were also fortunate in having the bronze cast made. It was made in Chicago, and largely on account of the cause it was done much under the regular price. Therefore we were able to secure this bronze tablet as you see it here, representing Mr. Harris in such a characteristic attitude and in such a characteristic occupation that it seems to me it makes it particularly pleasing to all of us who knew him, and especially to you who associated with him so much in this society. The tablet, as you know, is to find a permanent home in the main class room in the horticultural building over at the

state farm school; and there I understand it is to be accompanied by the portraits of other eminent horticulturists, not only of this state, but of other states; and the whole group, I hope, will serve as an inspiration to those who will gather there for instruction. It will not only inspire them in their work, but will give them to understand that the people of the state are willing to recognize in a fitting and substantial manner any eminence they may attain.

Memorial Hour.

In special commemoration of W. W. Pendergast, E. H. S. Dartt and Jas. T. Grimes, all of whom died during the preceding year.

MEMORIAL HOUR ADDRESS.

S. M. OWEN, MINNEAPOLIS.

Mr. President, Ladies and Gentlemen: Whatever contribution I may make to this occasion will be a spontaneous one from the heart. I assure you the head has had no previous work and has made no previous preparation for what I shall say. In fact, at this moment I do not know myself what I will say.

Before proceeding to speak of the three members whose memories we are to commemorate today, I think it is proper to say that the shadow of death has fallen upon two of our living members, that upon our stricken and beloved president in the loss of the wife of his bosom and the mother of his children, and in the affliction of our other brother, Mr. Elliot, whose family has also been stricken in the death of a sister. We should remember these men in their affliction if for no other purpose than that we may be able to say hereafter that while they are sorrowing in their homes at this moment, as they are, that we here had been thoughtful of them, and I believe they are conscious of the sympathy we have for them, and that that sympathy in this hour will help them to bear the burden of the great affliction that has fallen upon them.

It seems to me these recent deaths are calculated to attune our hearts to a more feeling and a more sympathetic participation in this little memorial service we are about to take part in.

This memorial hour of this society I regard as one of the sweetest as well as one of the most appropriate of all its work. It is so natural in this organization, meeting as it does at least two times a year, and bringing together substantially the same individuals every time, which brings with it an intercourse and an interchange of thought and a communion of spirit that greatly appeals to us and that deserves this sort of recognition of the memory of those who go before us.

This occasion is getting to be almost if not quite an annual one. As the society grows in years it must necessarily be so. The membership of this society that is now conscious only to our memory and to our recollection of them, is getting larger every year, and the responses to the roll call of this society that can be heard only

by the soul are growing more and more numerous every year. The list is now a long one, but we have the fondest recollection of them all. There is no disposition to forget a single one, but those who have departed within the past year are the ones whom we propose to speak of more particularly today.

And what shall I say of them that you do not already know? They were friends of yours, they were brothers of yours. Many of them were contemporaneous with you in the settlement and development of this state, co-workers for years and years, and, of course, you knew these men better as you knew them longer than I. They were men, speaking of them as a group, that were well fitted for the stations they occupied, well fitted to do the work they did. They were pioneers, all of them, and they were well calculated to make that fight of civilization against barbarism that they were compelled to participate in; and in doing that they laid the foundation of the development of the state, of its industries that we now enjoy, and so much of which is to form their memorial, that which is due to them for the work they did in developing the fruit interests of the state in existence.

I wish to speak first of our late lamented president, whom you all remember that brief year ago. It seems to me it cannot be a year ago, as I come before this meeting now; it seems to me as though I could turn around and see him behind me presiding as he did that short year ago. You all remember what a pleasing presence he had in presiding over the deliberations of this society. He was always genial, always humorous, but ever with a quiet dignity that lay behind it all. In the manner of his speech and the look of his eye was reflected the kindness and tenderness that was in his heart.

He not only did a great work in developing the fruit interests of the state, but he also did a great work in developing the educational and other important interests of the state. I cannot think of any man in whom we can honor ourselves more than we can honor ourselves in the late lamented Mr. Pendergast. He perhaps had opportunities to make himself more conspicuous in life than the other members whose memories we are commemorating now, and perhaps for that reason he occupied a more conspicuous position in the public eye. That might have been largely an accident on his part. Perhaps one of the other men similarly situated would have done as well, though probably not with the same element of popular favor, because of the difference in congenital and characteristic personal presence.

A year ago at this time Mr. Pendergast and Mr. Grimes were both with us. Mr. Dartt was not with us, because he was already failing in health, which would not permit his coming here. I think that was the first meeting he had missed for a good many years. There were very few meetings of this kind held by this organization at which he was not present. Mr. Dartt did a great work, not only on his own account, but he did an earnest, enthusiastic and faithful work as superintendent of one of the state stations for the development of fruit. He might not have accomplished all that we would desire; it is doubtful if any man, even a young man, could

live long enough now to accomplish what is desired in the way of fruit development in this state, yet what he did he did disinterestedly, conscientiously. He was ever industrious in his work and faithful in the discharge of his duties imposed upon him. He was always a public spirited man, with an especial enthusiasm in the way of helping to beautify and improve his town and making it a pleasant abiding place, and in that work he did what should commend itself to us and make us esteem his memory more faithfully. He may have had some characteristics that were not pleasing to everybody, but who of us have not? We must not judge a man by those qualities, no more than we must judge a man by physical peculiarities. Men are born with both of these peculiarities, and they are no more responsible for the one than for the other. I can remember nothing in relation to Mr. Dartt that was not of the most pleasant kind. To me he was always genial, affable, cheerful and humorous, and his deportment was all that any one could ask of a Christian gentleman.

With Mr. Grimes I had perhaps the least personal acquaintance of any of the three, but I do not see how any one, even a stranger, could look into that pleasant, genial face of Mr. Grimes without being able to say to himself, "Here, I am sure, I have met a man." His work, just what he did or what he accomplished in his particular line of fruit growing I should have to leave to others to speak of who knew him better than I did and who knew his work better than I. But as for the man, his characteristics, his character, his principle, too much cannot be said. It is something pleasant and ought to be for all of you to think that we have had a man of such character, such usefulness, such commendable qualities generally, associated with us. In fact, it is such men that have made this society what it is; that have made it an eminently useful and helpful society, as it is, and have enabled it to do the work that people who are to live after us will enjoy for long years after all of us are gone.

What I have said in this connection of these men who have gone before us I can say of many who are yet living; they who are men with whom we are all proud to associate, they who are going on and doing the work which we always commended so highly in those who have gone before; they who, we do not know how soon, will be the subject of a memorial occasion like this; and it will do no harm if we say or think of them a few things now that we would say and think of them at that time.

Let us participate in this occasion with more unction, with more feeling, inspired by this thought, that many of the young are coming on; in fact, the element of youth in this society is very much larger proportionately than it was years ago when I first became familiar with the society. Then the faces of the young was a very small element, indeed, in the makeup of its audiences, but now, I am happy to say, it is a large element. And let us all commemorate these workers who have gone before and by thinking more kindly of the aged who are still with us encourage the young to emulate their example, with the consciousness that they too will be similarly remembered when their whitened hairs are finally laid low.

We have much in an occasion of this kind to give us thought, it causes us to realize that there are things on earth of more importance

than the dollars we are after, or the apples we aspire to, or the fruit that we would perfect.

I said in the opening that I did not know what I was going to talk about, and I scarcely now know what I have been talking about. The truth is that my heart is full of the spirit of this occasion, and if we could all feel as I do just now I am sure that this occasion, this hour would have as much to do in improving men and women as any hour we spend in trying to improve apples and other fruits.

MEMORIAL HOUR ADDRESS.

A. J. PHILIPS, WEST SALEM, WIS.

Mr. President, Ladies and Gentlemen, and Members of this Society: Mr. Owen has covered the ground very fully, and I have not the knowledge, I have not the ability, and I am not familiar enough with the lives of these men to add anything to what Mr. Owen has said that would make any impression upon your minds. All I can hope to offer is perhaps a few words about the worth and the usefulness of these men.

As far as Mr. Pendergast is concerned, Mr. Owen has very fittingly described him. He was one of the most genial presiding officers I ever saw. He always had a fund of humor in things that he said that would take with the audience, and an audience would respect him and like him for it. He was just as pleasant when you met him at the hotel as he was when presiding in this room. He was a pleasant man to greet wherever you met him. You could see in his countenance that he was a Christian man. I do not know whether he belonged to a Christian church, and I do not care, he was a man who meant to do right.

Of Mr. Grimes I can say that I always had very much respect for him. I met him and his wife a number of times, and at the summer meetings he was always present, and he was always cheerful and full of kindness. He never said as much as the rest of us, but he was a well informed man, and one thing for which I shall always cherish his memory was that he was the first man to call my attention to the Virginia crab. He sent me my first tree. He made it possible for me to produce that tree which I have given to Professor Green, thinking it might be an inspiration for some young men at the school. It is a very fine tree, but I thought it would do more good there than it would where it was before, and that at the school of agriculture, where they take such great pains to train the young men for the work we are doing now, that it might be a valuable lesson in doing that work. Mr. Grimes made it possible to do that; he recommended the stock and then sent me the tree, and I have always honored and revered him for it.

In regard to Mr. Dartt: I was more intimately acquainted with Uncle Dartt than with the other two. Mr. Dartt was on my mind during the entire meeting last year. I always missed him, I always loved to hear him, whether it was here or in Wisconsin or Iowa. I loved to be with him. We used to spar considerably. I recall one circumstance which shows one of his characteristics. During one of the meetings he said to me at the hotel, "It was a little dull this morning. Now, I am going to read a paper on girdling and top-

working, and I want you to pitch into me when I get through. That will liven things up a little." He liked to see things move along. After he read his paper I did pitch into him. A stranger was in the room. On the way to lunch he asked Mr. Long, the reporter, "Who is that fellow who spoke after Mr. Dartt?" Mr. Long told him who it was. The man said, "I should think he would be ashamed to talk to Mr. Dartt like that, one of our oldest members. He said some things that many men would take as an insult." Mr. Long said to him, "I guess you will find that it made no difference. You will probably see them coming down to dinner together." He was right, we did go down to dinner together; it made no difference at all.

I liked Mr. Dartt. He was a guest at my home many times; my children liked him. He was odd in some things. One reason why I knew him better than the others was because he came from Wisconsin. He used to attend our meetings, and we felt that we had quite an interest in him. Last year I missed him in this meeting, and my mind was wandering down to Owatonna and wondering how he was. As soon as the meeting was over I took the train for Owatonna. Mr. Cashman met me at the depot and took me to his house. He knew me when I came into the room, but he was in a pretty bad condition and could not speak. His daughter insisted that I stay over night, and before night he improved so that he could speak a few words to me. The next morning I went in to see him, and he was so he could speak a little. He asked me about the meeting and what they said about the station. He also asked about Mr. Elliot and Prof. Green, and he finally said to his daughter, "I cannot visit with Mr. Philips; I cannot talk with him. You go to my trunk and get out that old diary I have there that I brought from Wisconsin. Let him take that and go into the other room and read it. That will tell him what I did from the time I was a young man until the present time in horticulture. He will enjoy that better than talking to me." He could hardly move in his chair. He said to his daughter, "You go out of the room" (he was always contrary) "and Mr. Philips will go." I went out and sat down and read that diary. I found he began it in 1856. I would have liked to have kept it, but his daughter wanted to take it with her to California as a keepsake.

I went through the park, I noticed his improvements, I could see what interest he had taken in horticulture—everything the man was connected with showed his characteristics. He was somewhat peculiar, and there were three things that he despised: those were a drunken man, a man that was spitting tobacco spit all around him and a dog. He did not like a dog. I used to talk to him about it, and I told him there were good dogs and bad dogs, but I could not change his mind. He did not like those three things. You go to Owatonna into the room where he lay sick and where he died, and you can see something of the fruits of his work. He took the first Scotch pine that he had planted and had them sawed up into lumber, and his room was fitted up with that lumber. The beautiful park that he left to the people of Owatonna will give them reason to remember him for a long time. He laid out that park himself, he

improved it, he put bridges across the little streams and ravines, and he put signs on those bridges which nobody would have thought of except Uncle Dartt. He provided a place for the boys to fish and swim, and he had a place to cut ice. We went to the park at one time to see them play ball. All that he asked for the use of the park was that they should use it for the purpose for which it was made. He had a number of small boats on the little lake, and the last work he did he put in a little steamboat, but as a financial venture it was not a success. He had an eye to the welfare and comfort of the public and did what he could for it.

You have an institution over here at St. Anthony Park where you are training young men and women from Minnesota and some from other states in the work that we are doing, only you are going to train them to do it better. I want to tell Prof. Green if he can give them the training so that they will follow in the footsteps and emulate the examples of Prof. Pendergast, Mr. Grimes and Mr. Dartt he will be doing a great work. Hold these men up as examples for the young men to follow. If they emulate those men they cannot go astray, and they will not only be useful men in the line of their chosen work, but they will be an honor to their community and to the state.

MEMORIAL HOUR ADDRESS.

C. M. LORING, MINNEAPOLIS.

Mr. President, Ladies and Gentlemen: Something over forty years ago a young man came into the store where I was engaged in business, one of the finest looking, most pleasant faced men I ever met in my life. My heart went out to him immediately. His face was so fresh, his eye so bright, his manner so kindly that one could not help but love him. For quite a good many years I knew this man very ,very well. Circumstances made it necessary for me to be away from the state for quite a good many years, so that I did not see him again until I met him as president of this society. He still had the same kindly smile, the same pleasant manner and the same faculty of drawing people toward him. He had done a great deal of work, he had been an educator, he had done a great deal of work in horticulture, he was honored at home and all through the state. During the years that we had him here as president of this society, as the time of the meeting approached one of the pleasures we looked forward to was that we should meet Mr. Pendergast.

Last summer we had a call saying that he had passed away. Quite a large number of gentlemen from the two cities went up to Hutchinson to attend the funeral. We found his remains lying in the casket on the lawn that he had sown, under the trees that he had planted, surrounded by the flowers which he loved so well, and the man who had done so much, whose life had been so useful, went to his rest surrounded by all of his neighbors and his friends from all over the country, who had come to pay a last tribute to his memory. There was a gathering there of the people whom he had

known for all the long time he had lived in that beautiful village. Kind words were said of him, as none other could have been said. The procession formed and followed his remains to the little cemetery. He was laid away, surrounded by the friends of his early youth and his old age, and some one said when we came away, "This is the pleasantest funeral I ever attended." That was really true. We could not have a feeling of regret only that we should never see him more. We felt that his life's work was done, that he had passed into the rest to which he was so justly entitled. We shall miss him here year after year as we gather at our annual meeting, yet we shall have blessed memories and a thankful feeling that we knew him and that we loved him.

Mr. Dartt I met nearly forty years ago as one of the earliest members of this society. I knew him only as I met him at these meetings. I knew him to be an earnest, conscientious and enthusiastic horticulturist. I knew that he felt that he was doing something for the good of the state, and I knew that he really wished to do something for the state, and I believe that he did. We shall miss him at the meetings, especially the older members of the society. We shall miss him for the energetic talk that the gentleman who preceded me mentioned, and he did many times enliven the meeting, but at the same time he told us something that we were all glad to hear and to know.

Mr. J. T. Grimes, the other member who has passed away, was one of my earliest friends when I came to this city. He was here several years before I came. He was always to me the same kind, friendly gentleman. It is said that "An honest man is the noblest work of God." Mr. Grimes was the personification of an honest man. I have known him socially and in a business way, and I always found him to be just the same honorable, upright and generous man. He was a most enthusiastic horticulturist, and his home was an ideal one. It was then a farm quite a little distance from the city, as we considered it at that time. It was surrounded with all the beautiful things that nature could give him to plant. He had trees, shrubs and flowers. Everything that was new he had, and I think we are very largely indebted to him for many of the beautiful shrubs that we see around in our grounds today. The last time I met him was at the summer meeting of the horticultural society. He was nearly blind, and yet he was going about trying to see the fruit, feeling of it with his hands in a loving way. His daughter was with him and directed him to the various points of interest to him. He said to me, "I was hardly able to get here, but I had to come." We were all glad to see him.

He has done his life work. His name will be honored in this community where he lived so long, and we can only hope that when we older members of this association pass away that we may have the same kind sentiments expressed toward us that I know we all feel and express toward his memory.

MEMORIAL HOUR ADDRESS.

O. C. GREGG, LYND.

Mr. President and Members of the Horticultural Society: I do not know how you were impressed with that organ solo, but I want to premise my remarks by telling you how it affected me. I am not a musician, but I think, I know, in fact, that I was born with a love of harmony, and as I listened to those sweet strains from the organ they were interpreted to me. First, there were those strains which always betoken sadness and mournfulness that is always occasioned by death—and when we consider it from the standpoint of nature there is nothing but gloom and sadness associated with it. One of the brightest men of the century said when looking into a tomb that it was "a windowless tomb." But every human being has another element in him aside from that of mind, which is commonly called the soul, and as I listened to that solo I found there were strains in it that were suggestive of triumph, and I said to myself, as I now say to you, they were exceedingly appropriate, because you with me believe when we speak of death we do not think of it alone from the standpoint of nature, which speaks to us only of sadness and sorrow and mourning as those that have no hope, but we think of it in another light, that betokens and makes us have firm faith in a higher and better existence. And I do not speak in fulsome praise, nor do I multiply words when I say that when we assemble here this afternoon to pay respect to those three men that we shall think of them as still living. I have no scientific proof of the fact, but I cultivate the faith that although they do pass into a higher plane of existence they still see us. I think so very frequently of my old father whose portrait hangs over my desk at home, and ever since I was a little boy I have cherished the belief that my mother, who passed away when I was a child six years old, nevertheless has watched over me and cared for me. John Wesley said of his people, "It can be well said of them, they die well," and the proof of the strength of that statement lies in the fact that it has been received and handed down to us for over one hundred years. That phrase carried the idea that the dying hour was the merit and measure of life. I think there is a better measure and which I would rather have said of me, and that is that "he lived well."

I have a few words to say concerning Prof. Pendergast, because with him I was well acquainted, and you know, friends, if you knew him at all, it is a truthful statement when I say that Professor Pendergast lived well. I wish to call to your attention what I believe to be a great fact in human life, that the best things, the best in us, is the last to appear. Look over the history of the world, and we have testimony abounding giving proof of a strong physical organization. Athletics have abounded almost from the beginning of history. And they have multiplied until we have rare examples many times multiplied of men who have excelled in mental strength and power to grasp things. After the mental comes the moral. And today it is safe to say that we have a measure of soul life of a man developed with the physical life, and when we speak of Prof.

Pendergast we measure him by that life. Best of all, as I remember him, having been in contact with him for some eighteen years, that life seemed to him as being the essential point. It was emphasized in his government as a teacher and as superintendent of our farm school. It was spontaneous with him; he governed by kindness, because he believed in kindness and love; and he governed well because he appealed to the most noble and the highest instincts of the people with whom he was brought in contact. It was one of those indications of the higher portion of our life. He was exceedingly charitable in his conversation, and the more I see of men and the more I study society the more I am inclined to place great stress on that type of life that is charitable of the faults and shortcomings of others. And with Professor Pendergast I want to speak a kind word for my and your old friend, Col. John H. Stevens. Both of them were similar in this respect. When we had occasion to speak of others in a spirit of criticism they would have a sense of pain in their countenances, and they would cast about for something good to say of them. I want to bear testimony to the fact that Professor Pendergast used his tongue exceedingly well. He lived near to nature's heart. I remember I was one day sitting in his office in the capitol building when he said to me, "Mr. Gregg, I think very much more of the money I get from my farm than I do of my salary." Do you know what it meant? You understand. The fruitage of the soil was dear to him. The money only measured his love for the product of the soil. That was why he became a member of the horticultural society. That was why he enjoyed himself in this society. That is why toward the close of his life he took so much pleasure in his home in the country and gave it his most careful attention.

My time is expired, and I close by saying I wish this world had a greater number of those who live and measure up to the standard of life like our old friend and horticultural associate, Professor W. W. Pendergast.

OUR COUSINS, THE TREES.

MRS. FLORENCE BARTON LORING, MINNEAPOLIS.

Though we can no longer cling to the "creed outworn" of the pagan, believing every tree to represent the abode of a wood-nymph, yet some of us regard these most lovable objects of inanimate nature with an emotion at once more intimate and no less appreciative and human.

The dryad of ancient days was the daughter of superstition and poesy: a lovely being, but somewhat elusive, except to the ultra imaginative person; whereas our cousin, the tree, in modern days, unaided by any interest beside that appertaining to itself, to the seeing mind and feeling heart, affords an object of reverence, solicitude, admiration and affection unequalled by aught that lacks the breath of life.

You will remember that Lowell, in his poem of "Under the Willows," alludes to this relationship in the following beautiful lines:

"I care not how men trace their ancestry,
To ape or Adam; let them please their whim;
But I in June am midway to believe
A tree among my far progenitors.
Such sympathy is mine with all the race,
Such mutual recognition vaguely sweet
There is between us. Surely there are times
When they consent to own me of their kin,
And condescend to me, and call me cousin.

"And I have many a lifelong, leafy friend,
Never estranged nor careful of my soul,
That knows I hate the axe, and welcomes me
Within his tent as if I were a bird,
Or other free companion of the earth,
Yet undegenerate to the shifts of men."

You will notice that he adopts no air of patronage in mentioning the closeness of this bond, but instead, uses the expression, "*they* consent and condescend," which denotes the true tree-lover, and affords a vast contrast to the complacent air of human superiority which Tennyson displays in his equally noted poem, "The Talking Oak." Many other American authors, like Hawthorne, Thoreau, Holmes, Burroughs, Aldrich and Schwarz, avoid, as well, a pompous attitude toward "our cousins" in their published writings, and we can read such books with a warm interest denied to the less sympathetic writer. The poet's thought in tracing his ancestry back of the ape to the tree is an idea certainly more pleasing to the fancy than the bald statement of the law of evolution; and his hatred of the axe finds response in many a breast, even though we meekly resign ourselves, the next moment, as a convert to the methods of the scientific forester. His self-congratulation that the leafy friend is a lifelong one, never estranged or over-zealous, is a feeling that we all have had reason to experience, at times, when some human friend has injured our sensibilities so that we crave comprehension and consolation. Mother Nature is not always able, in many of her manifestations, to readily adjust herself to our more sorrowful or tragic moods; for we then gaze almost reproachfully at the sun—he is too brilliant; at the sky—it is too blue; at the brook—it babbles of glee; at the ocean—its terrific sublimity passes us by. The immovable mountains, aspiring to heaven, are more akin, but their remote grandeur leaves us unconsoled, and it remains for our cousins, the trees, to apply a soothing balm to the wounded spirit. It is then, mayhap, that one ponders most fervently upon their beauty and endearing qualities.

Stately benignity seems embodied in the oak, elm, beech, linden, chestnut, maple, pine and others of the larger growth, while the smaller varieties claim recognition like childhood's playmates and the host of edible fruit-bearing species spread their choice stores invitingly, with never tiring hospitality. They all appeal to us, each in his own way and in *our* own way; for personal predilection counts for much in determining preference on the part of our leafy

friends, and the associations of early youth are an important factor also. Who can ever gaze unmoved upon the trees most clearly pictured in the memories of childhood? The varieties of oak, native to this state, were the constant companions of my youthful rambles, and the intimacy thus begun in early days will last, undiminished, to my latest breath. To another, the elm might be dearest, from a similar cause, while to the individual born and bred in the mountain ranges of New Mexico, Arizona or California some storm-racked conifer will dearer prove than any beautiful specimen of a

The largest elm in at Lawrence, Massachusetts.

favored but alien clime. The human exception to this rule is furnished by the nature in which familiarity always breeds contempt. This class invariably undervalues home ties and relations to unduly glorify exotic growth, either in vegetation or humanity.

Thus, while the majority recognizes all trees as kin, our first cousins among them differ with the individual. And here let us pause to advance the general proposition that it is the lover, seemingly, who determines the situation usually—not the beloved. In the majority of instances, through some blessed law of affection, 'tis the one who gives most who receives most; and so do our leafy relations only yield their secrets and love lavishly to those who care understandingly and yearn deeply for their companionship! Also, they are no respecter of persons—their best is given as generously

to you or me as to a queen or emperor. And what is this "best" that is never withheld, unless we lack receptivity? [The rightful claims of the forester, lumberman and artisan, or the man of commerce, have no place in this exposition, as practical compulsion here plays the major part; and this theme is concerned only with free gifts between those who are akin.] Their faculty of entering into our sorrows, with comprehension rare, has already received its mention; and their power to rejoice with us, in moments of delight or exultation, knows no limit. If their arms seem striving to embrace us, their leaves to murmur tender, murmurous phrases, and their patient, beauteous personality persuasively to whisper of endurance and hope in our hours of grief, just as surely in our joyous

The Minnesota elm on farm of A. C. Loring, at Lake Minnetonka.

days do their branches toss with happy glee, their leaves ripple with laughter and their whole aspect breathe of good cheer.

The adaptability of "our cousins" breeds in us, too, a philosophic calm concerning environment. Some species are naturally gregarious, others preferring a more solitary situation: this one selects the rich loam of a valley for its habitat; that, the more sterile land of the hill; while many thrive best in a northern climate, and others creep toward a tropical heat; but should fate or man interfere with this natural order of things, our tree-philosopher adapts itself to changed conditions as far as Mother Nature will permit.

Both in summer and winter do we owe them a debt for providing homes for our feathered songsters, and during the latter season a genial fancy makes us almost believe that the enduring foliage of the evergreens, and the dried leaves still clinging to some of our

forest trees, seek to remind humanity of the departed summer only to inspire faith in the coming spring.

This reminder, or illusion, is more eagerly welcomed by some of us than are bizarre effects provided by imported specimens or so-called improved varieties, which seem to anticipate the autumn while yet the summer lives in undiminished splendor. These purple, red or yellow trees and shrubs savor of the abnormal, and we glance at them askance, claiming no closer communion, much as we would be likely to avoid an unbalanced nature among humankind. In autumn, when bright hues reign, their peculiar traits are lost in the general revel of gorgeous coloring, as unequal or distorted natures may, amidst unusual circumstances, in seasons of stress or great festivity, in company with others, seem lost—or, appropriate enough, during the general commotion affecting all.

Nature plants "our cousins" in an inimitable manner, a manner most difficult to copy, even by a landscape expert. When one views some scene of surpassing beauty untouched by man, the untrammeled, pure design, so perfect as a whole and in detail, holds a secret in its perfection that is yet unsolved by the artist, landscape architect or nature-lover. While viewing the scene with admiration, one gazes into paradise, a paradise that assumes a sphinx-like transition when one seeks to penetrate the why and wherefore of its completeness.

It requires no prophet to predict that, some day, as now in Europe, through the necessities of practical forestry, our woods compassing any size will gradually become artificial in appearance; ultimately, to a considerable extent, beauty will be sacrificed to utility; which leads the tree-lover of today to reflect, half sadly, that while coming centuries may achieve victories in science, art, invention and altruism, surpassing the wildest dreams or hopes of the present generation, one boon will be denied that coming race of men, unrestrained, natural intercourse with "our cousins, the trees"!

In conclusion, even the most careless and light-hearted among us at times will picture the last resting place, where, perhaps willingly, we are fated to lay us down to sleep. And what, in connection with the surroundings, is most prominent in the mind? A cold, pretentious marble monument or a tree that will lean lovingly o'er the departed one, yielding protection and sweetly if vaguely hinting consolation to the living?

And in our dreams of the hereafter, can we not echo these sentiments?—

"Lord of the world to be,
Build me no jasper palace,
But the young leaf on the tree,
And the young bloom on the trellis!"

THE SUCCESSFUL APPLE ORCHARD OF THE FUTURE.

H. V. POORE, BIRD ISLAND.

The too often dying out of apple trees before fruiting, and the very few years of fruiting of those trees that live long enough to bear fruit, has convinced me that something is wrong and that I need not look for success upon lines that I have been following for the past twenty years.

My experience with apple trees has been such that the different tunes which tree agents harp upon have no more charms for me.

Mr. Hamlin V. Poore and seven-year old Plumb Cider apple tree.

At one time it sounded nice to hear of the long-scion grafting process, the short-grafting process and the budding process; of the wide leaf immunity from blight, etc.: but the charm is broken, and I have come to where I shall depend upon my experience and common sense to guide me in producing a successful apple orchard.

Where I am located the soil is deep, rich and porous, which applies also to the subsoil to a depth of twenty feet or more, giving all the promise I could ask for successful and healthy growth. Therefore, I must look to other causes and conditions to account for the short life of my apple trees. I find that in some seasons, owing to drouth, the soil becomes extremely dry to a depth of four to six

feet; also in winter if there is no snow to protect the ground from freezing deeply it becomes frozen to the depth of three and four feet. I find conditions, therefore, very trying to the vitality of the apple tree; especially so if the tree has been taxed by fruiting heavily. So when I consider the methods adopted in the propagation of apple trees, I believe those methods are against the tree passing successfully through the unfavorable conditions just mentioned. Very few trees regain the tap-root condition so necessary to help them withstand extremes of drouth and cold.

If left to remain where planted after grafting, some would put down deep roots, but after remaining in a nursery two or three years the roots are cut off and the tree is planted in an orchard, and in

View in orchard of Mr. Hamlin V. Poore, Bird Island.

most instances the whole top left on. Owing to fertile soil and favorable weather for growth the tree grows and appears thrifty, giving hope to the planter but of too short duration.

Now I come to my method of producing a successful apple orchard. I select seeds of apples grown in this state—the better the apple from which the seeds are selected the greater the promise of choice seedlings being produced. These seeds I grow one year in nursery row, then I transplant to permanent orchard, having of course the ground ready prepared and marked out. The greatest care must be observed in the preservation of the tap root. With spading fork, one forkful of earth is removed from the yearling tree, and the tree is then carefully pulled up, preserving in addition to the taproot all the lesser roots possible. By wrapping with wet

burlap the roots are protected from becoming dry in the air. In replanting every care must be taken to get the taproot deep down again in its natural state. A forkful of earth is removed, and with a suitable iron rod a hole is made deep enough to admit putting the root down full length; then the hole is filled up with loose, fine earth and firmly packed. The tree is now in its permanent place, as near perfect in its root development as possible, which I consider most essential for success.

All those trees which look most promising in growth, I will leave to bear fruit and will top-work later if fruit is not worthy in quality. Those trees which in growth appearance seem to tend towards crab variety, I will graft at once to known choice varieties. An orchard started as here suggested I am convinced will prove successful in its production of fruit and long life.

Mr. Poore: I have cited just what has been brought to my observation through life. I know of trees planted in 1848 in southern Ohio at the time when they were introducing the root-grafting process, where one-half were root-grafts and the other half were stock-grafts. In 1898 I visited that orchard again and not a single root-grafted tree remained, while the stock grafts were still there. While I resided in Missouri in 1873 I took the first premium at the St. Louis fair for the best seedling apple. My brother-in-law being a nurseryman planted a large orchard, and in 1876 that orchard was bearing heavily. A year ago my brother-in-law was up here and told me that there was not one tree in that orchard alive today, but those five seedling trees are apparently just as hardy and thrifty as they were when I knew them last in 1873. I can account for it in no other way except the maintenance of the natural condition in the ground. Nature does something for us by helping to counteract the influence of climate, etc.

Mr. Yahnke: I would like to ask the gentleman how old his trees are now which he planted when they were one year old?

Mr. Poore: After twenty years' experience and close observation I have just started my orchard.

Mr. Yahnke: I have always planted young trees. My orchard is planted on a northwest slope, and, like Mr. Busse's, it is an ideal spot because I have no other. (Laughter.) I had no other place to plant them, and in planting I used young trees. You can plant those young trees with long roots, and they will establish themselves and will go down where they can get water. My trees are thirty feet above the level of the water, where every drop of water runs away, and I have some of those trees planted 16x32 feet, and they are interlocked in every way, and in the sixteen foot distance they are interlocked four feet. They are vigorous and thrifty after twenty years. I planted young trees, and I cannot emphasize that point enough.

Mr. Rodell: In regard to the tap root, have you ever had any experience that would go to show that you get as good fruit from a tree with a tap root as from one that has no tap root?

Mr. Poore: I believe an apple tree will not do as well and will not produce as heavily as from a root-grafted tree, but you take those trees that produce heavily, followed by a hard winter, and your

orchard is ready to be planted again. We make a great mistake in our reports about the hardiness of trees. One man will report one way, and another man will report his trees thrifty and healthy. If a tree fruits heavily its vitality is exhausted, and the hardiness of an apple depends upon so many conditions of soil, climate, etc. that we cannot say that an apple is hardy everywhere. I believe the hardy apples you have got here will prove a failure if you take them away from the conditions you have here. You cannot make a statement here in regard to anything, but some one will appear and give an experience exactly the reverse. Let us give the conditions under which we are laboring. (Applause.)

Mr. Kellogg: If there is any advantage in the whole-root system this man gets pretty near it. I would plant the seed where the apple tree should stand. I do not believe in the whole-root system. You will get the downward roots anyway.

Mr. Patten: Mr. Yahnke seems to be very positive in his preference for a small tree. About thirty-five years ago when I came to northern Iowa there was a man living there by the name of Hyse, one of the most practical orchardists we ever had in that section of country, and there was another man living in Mitchell county, and their trees were six to eight inches in diameter. I had a good deal of business with those two men, and they were men who were practical orchardists, and those men would not plant small trees. They wanted the best three-year-old tree they could get, or even a tree four years old. My preference would be today, if I could get a two-year-old and a year-old tree, I would take the first of those trees, and I think it would stand more chances than any other tree you could select.

Mr. Yahnke: Just one word more. We are both right, I think. (Laughter.) It is all right to plant a bigger tree if you have an ideal place to plant it, but when you have not an ideal place, like mine and Mr. Busse's, where you have to plant your trees it is better to plant a young tree, because the roots will go down to seek water, while an older tree will bear more fruit.

Mr. Philips: This is a matter upon which we are not agreed, and it is a question which comes up everywhere. I was delegated to plant a trial orchard in northern Wisconsin. I have a report here of that orchard which it will take me just eight minutes to read. That orchard has been planted eight years, and I have made experiments in the growth of those trees right along the lines this man has been speaking about. I planted one-year-old, two-year-old and five-year-old trees in the same row, and I have the dimensions of those trees here.

"In the spring of 1896 I planted eighteen Northwestern Greening apple trees in the same row. Nine were two-year-olds and nine were five-year-olds. In 1903 I find the five-year-old trees average twelve inches in circumference and the two-year-olds eleven and one-half inches in circumference, and in three years more the two-year-olds, having been set back less in transplanting, will be away ahead of the older trees, an argument in favor of planting young trees. I also planted at same time nine different varieties of

trees as follows: I planted two three-year-old Virginia crab trees; sixteen feet north of that I planted six Wealthy root-grafts, and sixteen feet farther north I planted a three-year-old Wealthy tree; then I repeated it for, as Mr. Gregg says, a check. Though the Okabena and Northwestern Greening made a larger growth all around I will only give the measurements of the Wealthy now. In 1897 I top-grafted both the Virginia crab trees with Wealthy scions; now, in 1903 I find the top-grafted trees to be twelve feet high and nine inches in circumference, the root-grafts, of which the best ones were saved for trees without being moved or the roots mutilated, are eleven and one-half feet high and six inches in circumference, and the Wealthy that was three years old at time of planting is now twelve feet high and eight and one-half inches in circumference. Of over twenty varieties both top-worked and on their own stock, the three that are most thrifty are seedlings from three different states, to-wit: Okabena, from Minnesota; Patten's Greening, from Iowa; and Northwestern Greening, from Wisconsin. The above crab trees were top-grafted in 1897."

GROWING STRAWBERRIES FOR HOME USE AND MARKET.

G. A. ANDERSON, RENVILLE.

The strawberry is comparatively easy to grow if it is given attention and care at the proper time. Strawberries enough for family use can be raised on a very small piece of ground, as the yield most years is enormous if proper care is given. A patch of four or five square rods will supply the average family. The strawberry is one of our most delicious and wholesome fruits, both for canning and especially to eat fresh. It is quite a comfort to have them on the table three times a day for a month or more, fresh picked from your own garden, and, of course, the canned product can be had the rest of the year. In selecting ground for strawberries select such as is of medium elevation, and well drained, either naturally or artificially. Steep hillsides should not be selected, as during heavy rains they wash badly and cover the plants. My soil is a black loam with a clay subsoil, and I find they do very well on that. Soil that works easily is to be preferred to a stiff and heavy one.

Ground that has been growing a cultivated crop, such as corn or potatoes, and received thorough cultivation is best, as it will be cleaner from weeds and in better condition. If ground is not rich enough a coat of well-rotted manure should be applied. I generally apply the manure to the crop growing the previous season. I have also had good success planting on land that raised grain the previous season, but then the weeds are more troublesome.

In the spring we do not plow the ground, but go over it several times with a disc harrow and drag it until the soil is in fine condition. The reason we do not plow in the spring is that in a dry year fall plowing holds moisture better.

After the soil is well worked and in a fine condition, we mark the patch with rows three and one-half feet apart. This may seem rather close to some, but we use the corn marker for the work, which

is three and one-half feet. After marking we take a two-shovel one-horse cultivator, turning one shovel back and using just one. With this we run in the mark, getting a furrow deep enough to set plants in. I never use a spade or dibble. On a dry day only a few furrows should be made at a time.

The plants are set from one to two feet apart in the rows, according to how strong a plant-maker the variety is. Only first-class plants should be used, such as are dug from a one-year-old patch. For commercial purposes I think it is best to raise the plants at home, as it is sometimes difficult to ship plants and receive them in good condition.

Strawberry plants can usually be set any time from April 25th to May 15th or even later, but we get best results by planting as early in the spring as the ground can be worked and put in good condition. An early start is of great advantage, especially in a dry season.

The plants should be cultivated and hoed about once a week during summer until about August 1st. After that time but few weeds will appear, and those that do can be hand-pulled. All blossoms that appear the first year should be picked off, as it will give the plants more strength to develop. We let the plants form a matted row about two and one-half feet wide. Plant two rows of pistillate and one of staminate, of varieties that blossom at the same time, to insure pollination.

In regard to the most profitable varieties, they differ somewhat according to soil and locality. Among the pistillate varieties I have found none to equal the Warfield, both as to yield, size and selling qualities. For staminate we use the Lovett mostly. I have some of the Splendid planted, but have not fruited them yet. I have fruited the Brandywine two years, but they have not given good satisfaction. As soon as the ground freezes hard enough in the fall to carry a team the plants should be covered with clean straw, cornstalks or hay, three or four inches deep, to prevent ground from freezing and thawing in winter and thereby heaving the plants. This covering is left on the plants until they show signs of sprouting in the spring. It should be left on as late as possible without injuring the plants, as it tends to retard the blossoming period and may have the effect of saving the crop from late spring frosts. The covering is then raked off the plants and left in the spaces between the rows. A part of the covering is left on the plants, as they will readily grow through part of it, and the berries will be cleaner. This is all that is done until the crop is ready, except to pull any weeds that may appear.

As soon as the crop is gathered we go over the patch with a mower, cutting everything. This is left on the patch and in a short time new plants will appear. In this way we have grown two and three good crops without any cultivation after first year.

In regard to the profits derived from growing strawberries, they will vary as any other crop according to season. For home use it is not measured by dollars and cents, but by having a good supply of home-grown berries for family use. For market the returns will compare favorably with other crops grown. The year 1902 I kept

accurate account of the berries sold from one-third of an acre. Fifteen hundred quarts were picked, which sold in our home market for $165, and in addition to this about 5,000 plants were dug from the same patch in the spring. This year the same patch, with an addition of about ten square rods, produced 1,400 quarts, which sold for $130, the price averaging about 2 cents per quart less this year than 1902.

Mr. Barnes: When do you put on your mulch?

Mr. Anderson: Just about the time it is frozen hard enough so the wagon will not cut through.

Mr. Alfred Hawkins: I would like to ask Mr. Anderson what he uses in preparing the ground. Last summer I plowed my ground and sowed it to millet. I plowed it under this fall and intend to plant it to strawberries next spring.

One-third acre of strawberries on place of G. A. Anderson, at Renville, yielding in 1903 over 2,000 qts. Several thousand plants dug from it the previous year.

Mr. Anderson: I have had no experience with millet as a crop before strawberries, so I cannot say how it would do.

Mr. Gardner: What variety do you fertilize with?

Mr. Anderson: The Warfield.

Mr. J. A. Shephard: I have sowed millet the last two seasons before planting. It chokes out all the weeds and is a great benefit.

Mr. Elliot: Do you cut the top off or plow it under?

Mr. Shepard: I cut it off.

Mr. Elliot: Millet is a gross feeder, and it will injure the fertility of the soil.

Mr. Shephard: Before sowing the millet I give the ground a heavy coat of manure.

Mr. Geo. J. Kellogg (Wis.): I wish to ask Mr. Anderson whether he restricts his plants in the row and what varieties he recommends for planting.

Mr. Anderson: Most years I do not have to restrict them. I just let them grow for matted rows two feet wide.

Mr. Kellogg: How long do you leave on your mulch?

Mr. Anderson: I leave it on all the time.

Mr. Kellogg: How deep do you cover?

Mr. Anderson: I do not cover them very deep, just enough so the plant does not show through.

Mr. Kellogg: Does not that hinder their fertilizing?

Mr. Anderson: I don't think so; I have never had any difficulty in that way.

Prof. Robertson: Did you ever lose any by covering later in the fall after it was frozen deeper?

Mr. Anderson: I never waited that long before covering. I generally cover after the ground is frozen two or three inches.

Mr. Kellogg: What are the best varieties for family use?

Mr. Anderson: I think the Lovett and Warfield.

Mr. Kellogg: And which for market?

Mr. Anderson: The Warfield.

Mr. Elliot: Did you ever lose any by late covering?

Mr. Anderson: I never covered very late.

Prof. Robertson: I never cover mine until the ground is frozen as deep as it is going to freeze. I think the heaving comes from freezing and thawing. If I can have the ground thoroughly frozen I never lose any by covering late. My strawberries are not yet covered. You know some said last winter that they would be smothered next spring, but from those three small patches we picked over 1,200 quarts up to July 20.

Mr. Johnson: Why do you consider the Warfield the best as a market berry?

Mr. Anderson: Because it is the best yielder, and it is the best selling berry.

Mr. Brackett: Have you ever found that it was affected by drouth on account of its being a short rooter?

Mr. Anderson: That has not been my experience.

Mr. Studley: Have you ever had any experience with wood ashes?

Mr. Anderson: I have never tried wood ashes.

Studley: I have dabbled in strawberries a good deal, and my experience is that wood ashes, a certain amount, is one of the best fertilizers I have ever tried. I go to several saw mills within easy reach, where I can get them in large quantities, and I spread them over the beds, a certain quantity.

Mr. J. W. Murray: About how much?

Mr. Studley: I wait until the ground freezes. I want to say to the gentleman who spoke last that in my experience I would advocate deep freezing every time. I want the strawberry bed thoroughly frozen before I cover it. I very often do not cover mine until February. Then I do not cover very heavily. I use the ashes in moderate quantities, just giving the bed a good white sprinkling. I think any person who is in a position to obtain ashes will never regret his work if his experience is long enough to prove their value.

Mr. R. H. Pendergast: I have always made it a practice to use ashes freely on strawberries, and another thing I use is salt. An orchard and everything in plant life will be benefited by the use of ashes. I never like to cover my strawberries until the ground is thoroughly frozen. My experience is that I get the covering too deep if there is a good deal of snow, but I am so situated that I can use evergreen boughs, and I keep my plants back by covering them with evergreens. I find that gives me a later crop, which pays better.

Mr. Kellogg (Wis.): How much salt do you use?

Mr. Pendergast: Not a great deal. I scatter it over the vines two or three times during the season.

Mr. Kellogg: Say about two quarts to the rod?

Mr. Pendergast: That would not be too much.

Mr. Baldwin: I have had a little experience along that line. The rule is to use 100 bushels of hardwood ashes to the acre. If you use soft wood ashes or leached ashes you will have to use twice as much. Each one has to study the requirements of his own soil. If you had a timber soil you would naturally have plenty of ashes; there is a good deal in that kind of soil. In every soil that is lacking in potash you get good results from the use of ashes. If you have a soil where plants are inclined to make too much growth you will find it better to use ashes instead of manure; then you will have it less fertile and get a good deal better fruit.

Mrs. Moore: What time do you put on the ashes?

Mr. Baldwin: In the spring of the year. I scatter them thoroughly and then harrow them in. It is used just like a commercial fertilizer.

Mr. J. O. Weld: I want to add my experience on this subject, which should be the experience of every man having a little patch of strawberries. Most of my neighbors do not want to bother with strawberries. They believe it does not pay, and they have a sort of an idea that it is a work for women anyway. They plow a little patch around the house and let the women take care of it entirely; they think anything of that kind is too small for them to bother with. I had a little patch for several years about 50x55 feet, or a little over three rods square. Last spring it became pretty weedy; I did not know what to do with it. Finally I went to work at it on my knees to dig the grass out with a little trowel. While I was at work one of my neighbors came along and said, "Why do you want to bother with that; why don't you plow it up? It will never amount to anything." I said I would try it anyway and see whether or not it would pay. I got it cleaned, and when it came to the fruiting season we kept an accurate account of the berries we raised on that patch. There were eleven in the family; we had all we wanted to eat twice a day for a month; Mrs. Weld canned forty quarts, and in addition I sold $28.60 worth of berries from that little patch. That shows that it pays. I live at Lake Minnetonka, where we have a good market for our fruit, but at any rate it paid me to spend two days in that little patch.

Mr. Gardner: What varieties did you have?

Mr. Weld: I do not know. There were some Crescent, and the other kind I do not know.

Mr. J. H. Shephard: I intend to use a transplanter next season for strawberries. I would like to inquire whether any one has had any experience with it.

Mr. A. D. Barnes (Wis.): Do you have reference to a horse planter?

Mr. Barnes: I sent a customer at Milwaukee a good many thousand plants last spring, and followed them down to see them set with the planter. It was one that planted two rows, and it worked with wonderful success. Two boys sit between the shovels and drop the plants in the rows, the outside shovel covers them up, and the concave shovel presses the earth down. That job was very successful. They would plant five to six acres a day with a driver and two boys dropping the plants.

The President: I think there is a machine of that kind manufactured in Minneapolis. I believe it is made by the Owen Manufacturing Company.

Mr. Kellogg (Wis.): I wish to utter a word of caution about the Senator Dunlap. It will run ten feet, and unless it is restricted it will not be a success. I keep it in narrow matted rows about eighteen inches wide. I have some in rows at home about eighteen inches wide.

THE MINNESOTA FRUIT EXHIBIT AT THE WORLD'S FAIR, NOV. 1ST.

FRANK YAHNKE, WINONA.

How the fair impressed me when I came there, I have given you in my previous report, but after being there for two weeks I have looked more thoroughly into it.

Both of our fruit exhibits are novelties. The old Dutch windmill arouses more than a passing interest. The greater part of the people who enter the Horticultural Hall from the south entrance will first of all look at that windmill and utter exclamations of surprise and admiration at such an exhibit from Minnesota.

This certainly is a fine exhibit and surely worthy of the admiration the people bestow upon it. No apple on it is placed there by mishap or chance. Each apple is placed to secure the best possible effect, in blending of color and general appearance. Arrangements are made so that the arms move by the use of an electric motor. This novelty draws close observation and makes the people stand still with awe and amazement.

The other exhibit is a novelty by its structure. It has a turntable on each side revolved by the power of an electric motor. The fine, large fruits, set up in such a way so as to blend the colors and give the best possible appearance, always draw a crowd of eager observers, and we can at most any time hear such exclamations as these: "What fine apples!" "How beautiful!" "Minnesota can grow fruit!" "These are the best looking apples I ever saw!" "How nice and clear and fresh," and "You northern states have the advantage over us, for your fruits are not so much affected with diseases."

These dear people who admire our exhibits of fruits so much do not imagine how much work it is to keep it up in such a condition. Comparing our exhibit with that of other states I can say that the work on ours is triple or four times as much, even if other states have larger exhibits. If our fruit were placed on tables like the other states have placed theirs, the work to keep the tables and fruit clean would be comparatively little, and very handily done. But on our exhibit the shelves are so arranged that each shelf needs extra work and care and often each plate. Besides this there was the work to place the fruit on the windmill. One day during my stay three barrels of apples were placed on the windmill, which took two men, working hard, all day to do it.

Mr. Thomas Redpath, the assistant in charge of the exhibit, is the right man in the right place. He not alone knows how to do the work but he does it, too. He certainly does all that can possibly be done to make the Minnesota exhibit an honor to the state, and I received the impression that he succeeded remarkably well. During my stay, I had the opportunity to see in what condition the fruit shipped there arrived. Some of the fruit arrived in first class condition, but other shipments were badly bruised and some decayed. It was all due to the manner in which the fruit was packed. Wherever the fruit was nicely packed, and the box or barrel filled solidly, so that the apples could not move back and forth, they arrived in good condition, but where they had a chance to move they were badly bruised. When I left we had some very fine and large Wolf River, N. W. Greening and many other showy varieties of apples on the table, also a nice display of grapes and cranberries.

SOME IMPROVED HOME GROUNDS IN MINNEAPOLIS.

MRS. M. M. BARNARD, MINNEAPOLIS.

This paper is not concerned with the park-like surroundings of any of the palatial homes of which Minneapolis is so justly proud, and except for the purpose of defining the limitations of the topic it would not be necessary to mention them; for the home grounds here referred to are those where no hired gardener is employed and where careful economy is necessary in the expenditure of both time and money, and yet where the results have added materially to the fame and beauty of the city. It was to encourage such effort that the Commercial Club in 1902, and again in 1903, offered cash prizes for best kept lawns, and in recognition of former efforts along similar lines requested the Improvement League to appoint a committee composed of three of its members to inspect the yards of all competitors. This is an endeavor to give a brief report of the work of that committee; perhaps it would be better to say experience of that commitee, for the Public Affairs Committee of the Commercial Club had really done the work. The lists were all prepared, the city for convenience divided into five districts, and four cash prizes offered in each district: first and second for best kept and most attractive

yards, front and rear, of premises owned or occupied by one whose income did not exceed twelve hundred dollars ($1,200) per annum; and first and second (for each district) for yard, front and rear, of premises owned or occupied by one whose income did not exceed $1,200 per annum showing greatest improvement during the season. In addition to these, Northrup, King & Co. offered a cash prize for the yard judged to be the most attractive, and another for the one showing greatest improvement during the season of all in the city. The Jewell Nursery Co. offered prizes in plants. It is important to bear in mind the qualification "whose income does not exceed $1,200 per annum," and also that no limitation was placed in the opposite direction. Consequently it did not debar any one on that end of the scale—not even that much excluded group, the last-named of that gruesome trio so often mentioned on our statute books for the sole purpose of exclusion, and for legal convenience so amazingly classified. We did not meet any of the first-named nor of the second named of that trio, but of the last named, the "married women," we met a great many, and they interested us the more because they seemed to have more to contend with and because they did seem to have greater difficulties to overcome. I will begin with them.

There was one woman whose yard when we visited it in the spring was as bare and unattractive as anything could possibly be that was clean—for it *was clean;* even the *dirt* was clean and looked as though it had been scrubbed and rinsed until nothing could be expected to grow out of it, and clean old boards were used for walks and fences, both of which bore unmistakable evidence of feminine construction. The yard was all in the rear, for the house stood so close to the street and at so great an elevation from the street, because of grading, that there was no room for anything except a precipice in front.

When we visited this same place again in August the transformation reminded me of the fairy stories that children delight to hear where at a wave of the fairy godmother's wand the ugly becomes the beautiful. Here was a realization of it all, and this busy woman, in her clean, blue calico dress, was the fairy, and her willing hands the potent wand. All of that clean, ugly dirt was covered by a profusion of brilliant plants, every inch of space except that occupied by the clean old boards was a mass of gorgeous color. Even the old, eccentric looking fences and sheds were covered with vines, and the plants could easily shake hands across the board walks. Every well known annual was there; such a well cared for, jubilant collection of old friends from the flower kingdom is seldom met with—all looking as merry as a May party.

Another representation of the "married women" group peeked at us from behind the house where she was engaged in removing the surface of her entire town lot, in order to replace it with rich loam. She did not become visible, except as to her eyes and top of her head, until a sudden inspection revealed our identity, when she hastened to meet us and to tell us that she had been much afraid that her "improvements" would be all completed before the committee had been enabled to see the place in its original unadorned condition,

for she had no intention of awaiting the slow motions of any committee. Her better half was "laid up" with a broken rib, and she was, temporarily at least, "monarch of all she surveyed," although at that particular moment acting in the capacity of a self-regulating, well-lubricated steam shovel.

When we called in August we would not have recognized the place had it not been for the house, so greatly had this woman's indefatigable energy changed the surroundings. She had a well-kept lawn in front, and large vases containing palms, marguerites, vincas, geraniums, etc., and others containing caladium, coleus and other ornamental plants, all growing as only a lover of plants can make them grow. She had beds of cannas, hedges of sweet peas, and a "rockery" over which trailed nasturtium vines covered with blossoms. Every home flower that we could think of was there, and there she was herself, as busy as ever, but this time with a long hose watering her grass and flowers.

A third woman could proudly boast of an income, for she supported herself and her boy by washing, and really ought to be placed in the group with the capitalists were it not that she belongs here also. Here is a description of her yard written down on the spot. And remember, this woman, earning her living by washing, with the help of this little boy had done all of the work! I quote from my notes: "Yard ordinary size of town lot. Good lawn. A great many flowers. Many bushes. Rose bushes, dahlias, tiger lilies. Tubs filled with earth and plants growing luxuriantly. (Isn't that symbolical?) Potted plants set about in the yard. Beautiful beds of zinnias and petunias. Back yard very attractive—contains strawberry bed and vegetable garden. Boy and mother do all the work. Washes for a living."

Two or three more I must mention before leaving this group. One was obliged to confine her energies to a tiny little yard not more than ten feet wide by five or six feet long, but she must have worked hard to accomplish such results. She had enclosed her little yard—which was all in front—by means of a neat little fence about two feet high made of willow branches very firmly placed, with a neat design carried out with perfect uniformity, a very artistic piece of work in itself and made evidently by one accustomed to the handling of the willow in basketry or chair making or both. The flower beds were raised about eight inches above the ground, with sodded borders, and were a strange looking collection. There was a crescent, a star, a heart, a diamond and a long serpentine affair that we could not quite understand the meaning of. Before the flowers had begun to grow the effect was almost grotesque; its saving grace was the palpable fact that there was a strong effort to give expression to an ideal of some sort. This became intelligible when in August the crescent proved to be a crescent of zinnias, the star a star of mixed flowers, the serpentine bed a bed of pansies, and so on, each design distinct from all the rest. At each side of the little yard—beside the ornamental little fence—was a hedge of sweet peas. Not one inch of space was wasted.

In describing the next I think a quotation verbatim from my notes, taken down on the spot, will speak as eloquently as anything I could say, although the barest statement of facts: "An ordinary town lot; contains five large beds of well trained, luxuriant sweet peas, one large bed of verbenas, one large bed of phlox, one large bed of geraniums, one large bed of cosmos, one large bed of English daisies, one large bed of dahlias—dahlias were also used as hedges between front and back yards—one bed of chrysanthemums, and one long bed of castor beans used as screen to vegetable garden. Hedge of sunflowers and golden glow used as screen to chicken yard. Large bed of coleus and caladiums, five rose bushes. Bed of ferns, bed of tulips. Total, sixteen varieties of flowers, twenty flower beds. Also large vegetable garden in back yard and fine large flock of chickens. All taken care of entirely by one woman."

The enumeration of the work of these women grows painfully long, and yet there were so many who interested us it is hard to leave them—in fact I could not even begin this paper until I had discarded my notes entirely through mere superabundance of material—and the memories crowd one another. There was the sweet faced Scandinavian woman who struggled so hard with her limited vocabulary of English words to express her thoughts and feelings. Her yard proved her love of flowers, for it was one luxuriant mass of blossoms, which she shared with us generously and expressed her love for by saying, "A bin *friend* to flowers," a quaint expression that delighted the committee, who then and there conferred upon her the lasting title, "A friend to flowers," and have never since alluded to her by any other name.

I hoped to describe the yards cared for by the boys and the girls. We had, through our work in the Improvement League, learned what was possible for a boy or a girl to accomplish, but were glad to know that in this contest the yards cared for by them could compare favorably with those cared for by the grown-up people, and there were a number of them among the prize winners. As their work has been described before in other connection, though, we will pass on and allow the "lords of creation," the capitalists, to appear on the scene—and how quickly money tells, and what a difference the combination of strength and money—even if that is an income that does not exceed $1,200 per year—does make, when compared with the almost total absence of income and only a woman's strength! First, there was the street car conductor who in a few weeks metamorphosed the hollow remains of a dumping ground into a perfectly graded, sodded lot, with stone pavements, ornamental shrubs, beautiful, enormous bed of flowers, ornamental little iron fence marking boundary line at side of lot; chicken yard and house that were so neat and attractive that we were almost sorry that vines were planted to screen them from view from the street.

Then there was the brisk, busy man of affairs—a ward politician perhaps—whose yard was brilliant with fresh paint—bright red paint, too—and gorgeous flowers, who came out to say: "Mark it high, and I'll divide with you." But unfortunately for all concerned there were others in the district who had outclassed his efforts.

Better than this was the old gentleman who had abundance of time and of energy, both of which he had used to such good advantage that he had made his cool, well shaded corner lot so charming that Mrs. Nye, who was the general of our party, had to remind us again and again that we must move on or we would not get through.

Then there was the busy foreman who had made such beautiful rustic vases and boxes and baskets, all filled with flowers and ferns, and who had for years supplied his neighbors with cuttings, seeds and bulbs until the whole district was a garden. When he learned that the mayor's wife was a member of the committee he picked his choicest rose for her, and as he presented it to her, together with a tuberose, said: "The mayor is the father of the city, isn't he?" Which remark we thought quite equal to the "friend of flowers."

There were, besides, the gardens of the women, and the gardens of the boys, and of the girls, and of the men, the gardens where as members of one family and one household they all worked together, and it is not strange that the two which proved to be the most interesting and attractive of all that we inspected belong to this group. One represented aesthetic endeavor, the other utility combined with a due regard for aesthetic effect. They were both in the same district, each confined to a single town lot, each perfect in its way—together they proved to be an unsolvable problem for the committee. It is impossible for me to give an adequate description of either of them, but perhaps I may be able to convey a faint idea of their nature.

The first when we inspected it in the spring was a neat, orderly home, with good, well kept lawn, fine shade trees, house in good condition, everything homelike and comfortable in appearance. When we called in August the front yard was not conspicuous, although the effect was harmonious and in good taste—a rustic basket, some choice plants and ferns that were attractive but not brilliantly so. The lawn was like clean, bright velvet, the lot enclosed by an iron fence, perfectly plain, made of small iron pipe welded to plain iron posts with no adornment at all, but—here is the beauty of it—red honeysuckle had been planted at regular intervals and trained over and about the rail, and there was nothing to detract from its delicate beauty. At the side and next to the house were the flowers, many varieties of choice plants, a large number of them in this climate associated with hothouse culture. My notes contain the words, "Cannot be described, must be seen to be appreciated." In the back yard there were some arches over the walks and also as a foundation for screens made of the same iron piping, with vines climbing over them. Sheds and woodpiles that were in the corner of the yard directly back of the house were completely screened in this way, leaving the intervening space with grass plot and place for drying clothes. At the other side of the back yard and let into the velvety lawn were three large square tanks of neatest masonry, all cemented and enclosed like the lot with an iron rail, over which trailed beautiful vines. These tanks contained gold fish, which could glide through little channels from one tank to another and around and back and must have believed themselves in a large lake. The tanks also contained exquisite aquatic plants; in one the familiar

white pond lily, in another the pink lily, and in the third other choice aquatic plants. The little boy, who was the only member of the family at home when we called, told us that the yard represented the result of the combined interest and labor of them all, father, mother and child. Everything about the place was in perfect order and all spotlessly clean.

The other place, as before mentioned, was also a single lot. The occupants had been there four years; father, mother and daughters all worked in the garden. The little front yard was shady—too shady for flowers, but a long bed of maidenhair and other ferns that stretched the full length of the porch caused us to linger a long time to enjoy the beauty of what seemed like a bit of the heart of the forest. At the side, as an enclosure, was a hedge of arbor vitae, between which and the house were the flower beds. Mrs. Keyes counted twenty-seven varieties of flowers. There were varieties there that we had never before seen, the seeds and slips from which they had grown having been brought from the old home in Germany. There were, besides these rare varieties, all the varieties of familiar annuals. The back yard was divided into two parts: on the right hand was the vegetable garden, which had produced in rotation of crops all of the vegetables the family had required during the summer with the exception of potatoes, and there was a surplus for winter storage. On the left hand was the fruit. In the center a strawberry bed, from which they had gathered during this one season sixty quarts of strawberries. On each side of the square and at each end was a row of small fruits—gooseberries as large and fine as those raised in California; currants large and perfect, like the California varieties; raspberries and blackberries completed the list.

Some one in our party inquired how they managed to protect their fruit from trespassers, boys especially. The answer was: "The boys never touch anything. They often come to the fence and ask questions about the culture of the different things, but they never bother us. They seem to respect us and our garden."

I have avoided the use of names, but we have the names and addresses of all whose gardens we visited—all mentioned in this paper and many more.

I wish I had the power to impart to you an idea of the feeling of reverence aroused in the members of our committee by our visits to some of these homes. One member with head bowed and tears in her eyes said, "I feel—oh, I can't tell you how I feel! Just as I do in church sometimes!"—a feeling shared by the other members and akin to that experienced in the presence of the sublime in nature or when up on a mountain height we catch a glimpse of something fathomless beyond.

NURSERY IN THE PILLSBURY FOREST RESERVE.

GENERAL C. C. ANDREWS, STATE FIRE WARDEN.

The spruce and pine nursery on the Pillsbury Forest Reserve is located sixteen miles northwest of Brainerd. It is a carefully cultivated and fenced acre in which principally Norway spruce seeds were sown in long beds last spring. The Norway spruce came up fairly well. In many of the beds the rows are full of thrifty plants. The white pine and white spruce did not come up as well. The trees vary from an inch to three inches in height, and it is estimated that there are about a million of them.

The sight of so many young trees perfectly free from weeds is most pleasing. Half the nursery is covered with lath screens, and the other half with brush screens on poles resting on firmly set posts eight feet high. This shade has tinged the whole floor of the nursery with green moss—an interesting picture. The screens were planned by Professor Green, were made by Lars Hope, the nursery-keeper, in workmanlike manner, and will last several years.

The nursery being half a mile from Mr. Hope's residence, he was unable to prevent some of the seeds after they were sown from being consumed by blackbirds and gophers. As many as thirty gophers were shot. To dispatch the rest Mr. Hope put into their holes paper saturated with bi-sulphide of carbon. To the blackbirds he issued a few rations of millet mixed with paris green with desired effect.

Before snow falls these seedlings will receive a thin cover of hay. Before they are over two years old they should be taken up and set where they are to remain permanently. It is believed that spruce for pulp will yield quicker returns than any other tree on cut-over lands of light soil, and probably the forestry board will experiment in growing spruce on a part of the Pillsbury donation if the next legislature shall furnish means for doing so.

"APPLE DAY."

HORTICULTURAL HALL, ST. LOUIS, Oct. 4, 1904.

Welcome to the glorious festive day!
We hope and believe it has come to stay.
And on this—the young kids will ever prey!
"Hooray" for "Apple Day."

This is the gala day of the World's Fair!
Most glorious—though in conception rare!
Grand chance for dower—by some millionaire.
"Hooray" for "Apple Day."

Worth a hundred miles walk—is such a sight!
Legions will be tugging with all their might,
To put the "Big Red Apples" out of sight.
"Hooray" for "Apple Day."

The St. Louis Fair was not wrought in vain!
If it has foes—on "Apple Day" they're slain!
With "Big Red Apples"—we're sure of our game!
"Hooray" for "Apple Day."

"Apple Day" makes "Johnnie Apple Seed" shout!
And "Gideons' Band" to enjoy the rout!
Foes all killed by kindness—or melted out!
"Hooray" for "Apple Day."

SAM BUCUS.

MY CHERRY ORCHARD AND ITS LESSONS.

W. S. WIDMOYER, DRESBACH.

My first planting of cherries was made in the spring of 1893 and consisted of five trees each of English Morello and Montmorency, but it was so late that only two of each kind were alive the following fall.

(Lesson one: do not plant too late in spring.)

I also planted ten trees procured from a neighbor and said to be Early Richmond, but they are not; they are a tall growing

Cherry orchard on place of W. S. Widmoyer.

tree, with a light or grayish colored bark, and so far I have had no fruit from them, although they usually blossom full.

(Lesson two: do not pick up trees or plants from all over the neighborhood, unless sure you know what you are getting.)

I also set twenty root sprouts from an Early Richmond tree which grew on the old farm and bore good crops for several years, and which I know to be an Early Richmond on its own roots, as I dug and set the tree myself in 1879; yet these twenty trees have only had enough fruit for the birds so far.

(Question? Will continued propagation of the cherry and other trees by root sprouts be followed by unproductiveness?)

My main cherry orchard consists of seventy-five trees set out in the spring of 1894, consisting of twenty-five each of Kentish Red, Early Richmond and Homer Morello. In the spring of

1900 the Kentish Red and Early Richmond were full of fruit buds but were all killed by the cold weather. In 1901 we had our first good crop of fruit, picking thirty-one and a half bushels, which sold in St. Paul and Minneapolis for $3.50 and $4.00 per bushel. They were Kentish Red and Early Richmond. The Homer Morello trees were from root sprouts and have borne only a few cherries up to this time.

The past two years there has been but a small crop. We managed to get five or six bushels of the early ones, the birds getting all the late ones, taking them before they were ripe enough to market.

(Lesson three: shoot the birds.)

My trees were planted 12x12 feet, on the advice of the nurseryman, which is much too close. They grow too tall, it is hard to pick the fruit and causes so many of small lower limbs to die, getting your bearing wood higher up each year.

(Lesson four: plant 18x18 or 20x20 feet.)

The first four years the trees were cultivated clean, raising garden truck, muskmelons, etc., between them; since that time they have been left in grass, this being cut twice a year and left on the ground. This seems to be good for them, as they make an annual growth of ten to fourteen inches.

I have tried several varieties of sweet cherries, and all have proved a failure except the May Duke. We had a few cherries of this kind this season (1903). This is not a real sweet cherry, but a very good sub-acid, much sweeter than Early Richmond, etc., and the fact of its fruiting in Minnesota the past season is cause for encouragement to the growers of this fruit.

From my experience, I cannot advise extensive planting of the cherry in Minnesota except in the most favorable locations.

KEEPING UP HUMUS IN THE SOIL.

JOHN OSBORN, DASSELL.

The necessity of keeping soils well supplied with humus, especially in droughty seasons, is apparent to all good farmers and gardeners. I may be asked what it is and what its specific office, but more important is the question "How can it best be supplied." It is generally conceded to be a peculiar brown or black matter resulting from decayed vegetation in the soil, and that it is found only in the surface is apparent—imparting to it a rich brown appearance. It contains carbon, oxygen and hydrogen, and during its decomposition carbonic acid is formed which con-

tributes to the nourishment of the plant. But it is supposed to render its most essential service by its power of absorbing with ammonia and also though to a less extent, with soda, potash, lime and magnesia and thus retaining these substances for the use of the plant. Humus from its dark color causes a more rapid absorption of the sun's heat, absorbing twice or nearly its weight of water, and retains a greater portion of it after hours of exposure. It consequently enables the soil to absorb and retain water, rendering it more mellow and capable of being worked and of nitrification to work. With plenty of humus the soil may be said to be in a proper mechanical order for the production of good crops.

To supply humus to those who are farming many acres is much more difficult than for small areas where manures are plentiful. Often it can be had for the hauling. One can resort to various practices—plowing down clovers and rye for all corn, potatoes and cultivated crops. For oats and wheat, plow the land that was cropped as soon as the crop is removed and sow to oats or barley, a small amount to the acre. By plowing shallow the seed that was shelled will come up also, and there will be a good growth to turn under late in fall that will greatly aid the next year's crop. Very often a little extra labor and expense pays a handsome profit.

How to grow best and paying crops ought to be the farmers' and gardeners' motto and not to spread oneself over so many acres that the light crop disheartens. It is always a pleasure to look at a good crop and thrifty trees and shrubbery—all at their best.

The strawberry patch, be it small or large, needs to be well supplied with humus to tide it over the drouths that often prevail in our northern latitude.

We have had several years' experience in plowing down rye and clover for potatoes and corn, and the results have been gratifying. The practice of burning straw is indeed a waste of humus element. When leaves can be gathered they, too, plowed under are good.

Most all farmers and gardeners need to lessen the area and improve the soil and make it like that in older countries that yields enormously, and the profit will be better, and we will be better rewarded for our toil.

PROGRAM ANNUAL MEETING,
December 6-9, 1904.

ANNOUNCEMENT.

The annual meeting is to be held in the audience room of the First Unitarian Church, located on the corner of Mary Place and 8th St. (midway between Nicollet and Hennepin aves.). The fruit exhibit will be located in the lecture room in the basement of the church, readily accessible from the audience room above. There are also other rooms conveniently situated to be used as committee rooms, for the meeting of the Bee-Keepers' Association, etc. There is also a check room, where coats, etc., will be cared for.

The special effort of last year to get out a large exhibit of long keeping seedling apples of merit is being continued, and the amount of premium offered for this purpose remains at $100.00. Competition in seedling apples is open to western Wisconsin, northern Iowa, North and South Dakota and Manitoba. This ought to bring out a large display of valuable seedlings, as we know there are a good many of merit that have not yet been shown. Let each member bring what he can and use his influence to get out all the good seedlings in his neighborhood. If the growers of them cannot come to the meeting themselves and bring them along, have them sent to the secretary, directing to the place of meeting. Consult premium list on the back leaf of this program.

A large meeting is assured. Delegates from all the horticultural societies near us will be there and a good sprinkling of visitors to add to the interest.

Don't forget the annual banquet, which every member should certainly attend. (See page 11 of the program.)

Will you be there? Reduced railway fares and low hotel rates make this an economical time for you to visit Minneapolis and attend the largest meeting this society has ever held. At least it should be such, as our membership was never so large, being now over 1,800.

And don't fail to bring the wife along! She should be a member of the Woman's Auxiliary and lend a hand at the gathering.

Hotel Vendome, 21 South Fourth Street (between Nicollet and Hennepin aves.) has, for the eighth time, been selected as headquarters for visiting members and friends, and rates secured of 75 cents to $1.00 per day of one in a room; two in a room $1.25 to $1.50 per day. One of the best popular price restaurants in the city is located on the ground floor of this building. Register as "horticulturists," and you will be well treated. Only one-half block from our secretary's office and library, in the Kasota Block, and five blocks from the place of meeting.

Rooms can be reserved by notifying the secretary, giving full particulars.

WEDNESDAY FORENOON.

Special Notice to the Ladies.

SOCIAL REUNION

OF THE

Ladies of the Horticultural Society,

INCLUDING THE WIVES
OF ALL MEMBERS,

FROM 10 TO 12 A. M., WEDNESDAY,

BY INVITATION OF

MRS. CHAS. M. LORING,

AT HER HOME, NO. 102 CLIFTON AVENUE.

Take the 1st Avenue car to 17th Street, where a gentleman wearing the badge of the Society will be in attendance from 9:45 to 10:30 to direct to the house, two blocks away.

Short talks by Miss Margaret J. Evans, of Northfield, and Mrs. A. W. Rankin and Mrs. Lydia Phillips Williams, of Minneapolis, and others, music and refreshments, interspersed with ample opportunity for making and renewing acquaintances. A cordial invitation to all, and a very full attendance desired.

A TEN MINUTE LIMIT.

On account of the fullness of the program and to allow plenty of time for discussion, those presenting topics are requested to limit themselves to **ten minutes** in their reading, or **1,000 words.**

PROGRAM.

TUESDAY MORNING SESSION.

9:45 o'clock.

Every member attending should not fail to be in his seat promptly when this session opens.

Organ Prelude, E. A. Smith, Lake City.
Opening Song.
Invocation,
Rev. G. L. Morrill, Minneapolis.

1. President's Annual Address,
   Clarence Wedge, Albert Lea.

Appointment of committee on credentials.

2. "Possibilities" in Floriculture,
   C. S. Harrison, York, Neb.
3. Garden Experiments,
   T. T. Bacheller, Minneapolis.
4. Chop Talk No. 3,
   Wyman Elliot, Minneapolis.
5. Some Prairie Problems in Tree Planting,
   Prof. A. T. Erwin, Horticulturist,
   Iowa State Experiment Station.
6. Ginseng Cultivation,
   Preston McCulley, Maple Plain.

Renew your membership or become a member by paying the Secretary $1.00.

All annual memberships expire on the first day of the annual meeting.

TUESDAY AFTERNOON SESSION.

1:30 o'clock.

CALENDAR SESSION.

For March and April.

Report of committee on credentials.

1. The Apple Orchard in March and April,
   Geo. W. Strand, Taylor's Falls.
2. The Plum and Cherry Orchard in March and April,
   Dewain Cook, Jeffers.
3. The Small Fruit Garden in March and April,
   R. A. Wright, Excelsior.
4. The Vineyard in March and April,
   Mrs. I. Barton, Excelsior.
5. The Vegetable Garden in March and April,
   R. L. Bailiff, Bloomington.
6. Flower Garden and Lawn in March and April,
   Mrs. A. S. Hanson, 3232 Harriet Ave., Minneapolis.
7. The Plum Curculio a Foe of the Apple,
   Prof. F. L. Washburn, St. Anthony Park.
8. My Experience in Spraying the Orchard,
   H. H. S. Rowell, Excelsior.
9. Dust Spraying, G. C. Johnson, Kansas City, Mo.

Appointment of committees on award of premiums, president's address, obituaries and final resolutions.

You can become a life member by payment of $10.00, in two **annual payments of $5.00** each if you prefer. This will entitle **you to a file of our** bound reports, a library in itself.

WEDNESDAY MORNING SESSION.

9:30 o'clock. Be Prompt.

A VERY IMPORTANT SESSION.

Annual Reports.

Reports of Vice-Presidents,
- First Cong. District, C. W. Merritt, Homer.
- Second Cong. District, David Secor, Winnebago City.
- Third Cong. District, A. H. Reed, Glencoe.
- Fourth Cong. District, Le Roy Cady, St. Anthony Park.
- Fifth Cong. District, R. A. Wright, Excelsior.
- Sixth Cong. District, W. L. Taylor, Howard Lake.
- Seventh Cong. District, D. T. Wheaton, Morris.
- Eighth Cong. District, R. H. Pendergast, Duluth.
- Ninth Cong. District, Rev. O. A. Th. Solem, Halstad.

Annual report of the Executive Board,
Wyman Elliot, Chairman, Minneapolis.

Annual report of Secretary, A. W. Latham, Minneapolis.

Annual report of Treasurer, A. B. Lyman, Excelsior.

Reports of Superintendents of Trial Stations,
- Thos. E. Cashman, Owatonna.
- Dewain Cook, Jeffers.
- O. M. Lord [plums and small fruits], Minnesota City.
- F. I. Harris, La Crescent.
- A. B. Lyman, Excelsior.
- L. R. Moyer, Montevideo.
- Mrs. Jennie Stager, Sauk Rapids.
- J. S. Parks, Amboy.
- F. J. Cowles, West Concord.
- Prof. S. B. Green [Central Station], St. Anthony Park.

Reports of Local Societies.
- Southern Minnesota Horticultural Society.
- Meadow Vale Horticultural Club, and others.

Report of Committee on Permanent Location,
C. M. Loring, Chairman.

Report of Committee on Packages and Marketing,
- R. A. Wright, Excelsior.
- Levi Longfellow, Minneapolis.
- Thos. Redpath, Wayzata.

Report of Committee on Ornamental List.
- C. M. Loring, Minneapolis.
- A. W. Hobart, Minneapolis.
- J. E. Northrup, Minneapolis.

Minnesota Fruit Exhibit at World's Fair,
A. W. Latham, Supt.

Announce Social Reunion of ladies tomorrow forenoon

Secure a new member in 1905, and receive one of the valuable and practical works on Horticulture given by the Society as premium. For list see "Society Folder."

WEDNESDAY AFTERNOON SESSION.

1:30 o'clock.

FRUIT LIST.

Report of Committee on Fruit List.
- Prof. S. B. Green, St. Anthony Park.
- J. P. Andrews, Faribault.
- Thos. E. Cashman, Owatonna.

Adoption of Fruit List for 1903.

SEEDLING FRUITS.

Report of Committee on Seedling Fruits.
- Wyman Elliot, Chairman.
- Prof. S. B. Green, St. Anthony Park.
- O. M. Lord, Minnesota City.

Report of Committee on Awards on Seedling Apples, with display of those sorts receiving highest awards, by Chairman of Committee.

3:00 o'clock.

Woman's Auxiliary—Joint Session.

President's greeting,
Miss Emma V. White, Minneapolis.

Secretary's report,
Mrs. Anna B. Underwood, Lake City.

1. The Girls Department of the Agricultural School and its Influence on the Home Life in the Country, Miss Catherine Comfort, Preceptress Girls Department, Minnesota College of Agriculture.
2. Fruit and Vegetables as a Food from the Hygienic Standpoint, Dr. Mary S. Whetstone, Minneapolis.
3. Hospitality in the Home,
   Miss Margaret J. Evans, Northfield.
4. Description and Habits of the Blue Jay,
   Mrs. G. F. Benson, Lake City.

Annual fee for Woman's Auxiliary, 25 cents, but members of the State Horticultural Society become members upon application to the secretary without further expense.

Announce evening session of Bee-Keepers' Association, with stereoptican lectures by E. R. Root and Prof. F. L. Washburn. See page 14.

THURSDAY MORNING SESSION.

9:30 o'clock. Be prompt.

Announce Annual Meeting Woman's Auxiliary at 10 o'clock—in adjoining room.

CALENDAR PROGRAM.

For September and October.

1. The Apple Orchard in September and October, J. P. Andrews, Faribault.
2. The Plum and Cherry Orchard in September and October, Frank Yahnke, Winona.
3. Small Fruit Garden in September and October, Wm. Lyons, Minneapolis.
4. The Vineyard in September and October, Gust Johnson, Excelsior.
5. The Vegetable Garden in September and October, J. V. Bailey, Newport.
6. The Flower Garden and Lawn in September and October, Mrs. N. S. Sawyer, Excelsior.
7. My Experience in Strawberry Growing, Jabob Schwab, Anoka.
8. My Experience with the Plum Pocket, S. D. Richardson, Winnebago City.
9. Preparing the Grounds for the New Home, O. C. Thompson, Farmington.

Bring questions to the meeting for the **question box.** It is always in order to open it.

THURSDAY AFTERNOON SESSION.

1:30 o'clock.

1. The Aim and Methods of the American Breeders' Association, Prof. W. M. Hays, St. Anthony Park.
2. Lessons of Observation and Experience in Horticulture, David Secor, Winnebago City.
3. Fertilizers for Horticultural Purposes. Prof. Harry Snyder, St. Anthony Park.
4. Horticultural Notes on my Trip West and North, Prof. S. B. Green, St. Anthony Park.

2:45 o'clock. Annual Election of Officers.

3:00 o'clock.

Minnesota State Forestry Association, Joint Session.

Annual address of the President, Chas. M. Loring, Minneapolis.

Annual report of Secretary, Wm. T. Cox, St. Anthony Park.

1. What Minnesota Needs in Forestry, Gen. C. C. Andrews, State Forest Fire Warden.
2. Forestry as Related to the Farm, Mrs. Lydia Phillips Williams, Minneapolis.
3. Forestry and Game Protection, Samuel F. Fullerton, State Game Warden.
4. The White Pine Weevil, Prof. F. L. Washburn, State Entomologist.
5. Federal Aid for Tree Planters, S. B. Detwiler, U. S. Bureau of Forestry.
6. Suitable Trees for our Prairies and Roadsides. Harold Cuzner, Experiment Station.

It is expected that short talks will be given by S. B. Green, Professor of Horticulture and Forestry, University of Minnesota, also by prominent Minnesota lumbermen.

Business session and annual election of officers of Forestry Association.

THURSDAY EVENING.

6:30 o'clock.

Annual Society Banquet.

The banquet will be held in the Young Woman's Christian Association building, No. 87 South Seventh Street. Those attending will go in a body direct from the adjournment of the Thursday afternoon session.

Tickets can be procured of the secretary at 75 cents each.

DON'T MISS IT!

FRIDAY MORNING SESSION.

9:30 o'clock. Be Prompt.

Reports of committees on award of premiums and president's address.

Orchard Topics.

1. Plant Breeding as a Practical Pursuit, C. P. Bull, St. Anthony Park.
2. Notes on Fruit Breeding, Prof. N. S. Hansen, Brookings.
3. My Apple Storage House, J. A. Howard, Hammond.
4. Influence of Fertilizers in Giving Color in Fruits and Flowers, W. C. Gould, St. Paul.
5. My Duchess Orchard, Eli Stone, Excelsior.
6. Growing Seedling Apples on a Minnesota Prairie, John Bisbee, Madelia.
7. Minnesota Apple Seedlings, D. F. Akin, Farmington.
8. Gathering the Apple Crop, Emil Sahler, Waseca.

ONE THOUSAND DOLLARS.

Is offered as a Premium by this Society for

A SEEDLING APPLE TREE

"As hardy and prolific as the Duchess," with fruit equal to "the Wealthy in size, quality and appearance, and that will keep as well as the Malinda."

COMPETITION OPEN TO ALL.

For further particulars address the Secretary.

FRIDAY AFTERNOON SESSION.

1:30 o'clock.

General Subject – Orcharding.

1. Starting an Orchard on a Minnesota Prairie,
   J. L. Tiegland, Minnesota.
2. Why Some Orchard Trees do not Bear,
   Prof. Wm. Robertson, St. Anthony Park.
3. The Making of a Successful Orchard,
   E. A. Smith, Lake City.
4. The Wealthy as a Parent of Seedlings.
   A. B. Lyman, Excelsior.
5. Trimming the Orchard.
   S. H. Kenney, Waterville.
6. Winter Care of Fruit Trees.
   J. V. Wichler, Owatonna.

Unfinished Business.

Report of com. on obituaries and final resolutions.

4:00 P. M.—Two Minute Speeches by Members.

MUSIC.

4:30 P. M.—Closing Remarks by the President.

MEMBERSHIP IN 1904.

1664 Annual Members. 138 Life Members.

Total Membership, 1802.

OUR STANDARD FOR 1905, 2500 MEMBERS!

Will you send us one of these?

HORTICULTURAL SOCIETY PREMIUM LIST.

All exhibits must be entered with the secretary and **in place by noon** of the first day of the meeting to be entitled to compete for premiums.

Exhibitors competing must be members of this society and the growers of the articles exhibited.

The rules governing the horticultural department of the Minnesota State Fair will be applied except where they conflict with this list.

FLOWERS.	1st Prem.	2d Prem.
Collection of ornamental and flowering plants	$5.00	$3.00
Table bouquet	2.00	1.00

GRAPES.	1st Prem.	2d Prem.	3d Prem.
Collection	$5.00	$4.00	$3.00

APPLES.			
Collection, not to exceed 10 varieties	6.00	4.00	2.00
Each variety of apples included in the 1904 fruit list of the society, or in the 1904 premium list of the Minnesota State Fair (kept in cold storage)	.50	.25	.....
Each variety of apples (or crabs) included in the 1904 fruit list of this society, or the 1904 premium list of the Minnesota State Fair (not kept in cold storage)	.50	.25	.....
Peck of Wealthy apples, the fruit exhibited to be at the disposal of the meeting	4.00	3.00	2.00

Special Premium Offers.

Peck of Northwestern Greening apples. First premium, $6.00 in nursery stock; second premium, $4.00 in nursery stock. Offered from anything in stock by Mitchell Nursery Co., Owatonna.

Peck of Patten's Greening apples. First prize, 6 Wealthy and 6 Virginia apple trees, 3 years old, offered by W. H. Eddy, Howard Lake. Second prize, 75 gladiolus bulbs, offered by W. E. Fryer, Mantorville.

HORTICULTURAL SOCIETY PREMIUM LIST.—*Continued.*

Seedling Apples.

Competition in seedling apples is open also to the western half of Wisconsin, the northern third of Iowa, and all of North Dakota, South Dakota and Manitoba.

EARLY WINTER SEEDLING.—The fruit shown must not have been keep in cold storage. A specimen of wood three years old (at least six inches long) taken from the tree bearing the apples shown, and a concise history and description of the tree and its fruits, must accompany each entry.

Competition is open to all except on such varieties as are being propagated for sale by some person other than the originator.

Premiums will be divided pro rata among all the entries commended by the judges according to the comparative merit of each as a commercial fruit. Premium $10.00.

LATE WINTER SEEDLING.—Same conditions as for early winter seedling except that if found necessary the fruit shown may be retained and final decision reserved till later in the winter. Premium $60.00.

Special Premium Offers.

For Best Early Winter Seedling Apple, 50 Wealthy apple trees, 4 to 6 feet.

For Best Late Winter Seedling Apple, 50 Wealthy apple trees, 4 to 6 feet.

The above two special premiums are offered by the Jewell Nursery Co., Lake City.

OFFICERS:

PRESIDENT.

Clarence Wedge, - - - - - - - - Albert Lea.

TREASURER.

A. B. Lyman, - - - - - - - - - Excelsior.

EXECUTIVE BOARD.

(The president and secretary are members ex-officio.)

Wyman Elliot, Chairman, 2 years, - - - - Minneapolis.
Frank Yahnke, 2 years, - - - - - - - - Winona.
John P. Andrews, } terms expire - - - - Faribault.
Lycurgus R. Moyer, } Dec. 8, 1904 - - - - Montevideo.
Prof. Samuel B. Green, 1 year, - - - - St. Anthony Park.
J. M. Underwood, 1 year, - - - - - - Lake City.

SECRETARY.

A. W. Latham, 207 Kasota Block, Minneapolis.

For list of vice-president's and supt's of trial stations see page 6.

Secretary's Corner.

SOUTHERN MINNESOTA HORTICULTURAL SOCIETY.—The annual meeting of this society will be held at Spring Valley, Jan., 13, 14, 15, beginning at noon on the 13th and ending at noon on the 15th. This society always has a very interesting meeting, and members who are within reach of Spring Valley are urgently requested to attend. Mr. J. C. Hawkins, of Austin, has been appointed as delegate to represent the southern society at our annual meeting.

THE NATIONAL HORTICULTURAL SOCIETY.—This is, I understand, the name of an organization perfected at the World's Fair composed of officers of the various state horticultural societies. Mr. Frank Yahnke, of Winona, a member of the executive board of this society, attended and took part on the program and was elected a member of the executive board of the national organization. We may expect to hear from him further in regard to this new national society.

LIST OF THOSE SENDING NEW MEMBERS.—The following is a list of those sending new members from June 1st to Nov. 14th: M. Oleson, 1; T. E. Cashman, 5; B. T. Hoyt, 2; A. K. Bush, 25; Geo. W. Strand, 2; Jos. Wood, 1; Geo. E. Fortin, 1; J. P. Andrews, 3; F. M. Crosby, 3; J. R. Cummins, 1; W. H. Stout, 2; L. Johannessohn, 1; O. Hoglund, 1; LeRoy Cady, 2; A. B. Lyman, 2; Jens H Krag, 1; J. A. Campion, 4; J. M. Underwood, 1; R. M. Probstfield, 1; F. X. Ferodowill, 1; B. E. St. John, 2; Rev. Chas. Pfeiffer, 1; Rev. J. B. Katzner, 1; J. V. Wichler, 1.

SEEDLING APPLES AT THE ANNUAL MEETING.—There will be a fine show of seedling apples at the annual meeting this winter, even greater, we are assured, than the one made last year. A number of Wisconsin seedling exhibitors will be present, although we hear nothing as yet from northern Iowa or the other states about us. What seedling apples have you, or that are in your neighborhood, that have probable commercial value? Each member should interest himself to see that such new fruits are displayed at the coming meeting. The cash premiums offered will be divided pro rata among all the exhibitors of seedling of commercial value.

FATAL TO RABBITS AND MICE.—An experienced orchardist recommends the following sure method of getting rid of these orchard pests. "Make a poisonous solution of one part sulphate of strychnine, one-third of one part of borax, one part of white syrup, ten parts water. This is put into a roomy bottle and well shaken. Now cut fresh twigs from apple trees (water sprouts are excellent); have a small brush, and brush lightly over the twigs, especially the terminal buds. The great value of this over poisoned grain is that it will kill rabbits and mice and will not injure the birds or chickens, while the poisoned grain will kill all. Scatter the poisoned twigs in runways and places infested with mice or rabbits, and the results will be satisfactory."

A City Outing for our Members.—Those of our members living outside of the Twin Cities have as much of a right to a city outing in the winter as the city people have for a country outing in the summer. The meeting of the horticultural society gives you just the opportunity needed. A low rate to the meeting and special rates at the hotels, an interesting program during the sessions of the meeting, the reception to the ladies of the society on Wednesday forenoon, and the society banquet Thursday evening—all these combine —and add to this the other opportunities that come to the occasional visitor in the city—making an irresistible attraction. Turn over the cares of home to some one else for a few days and come in and enjoy this occasion with us!

Discussions at the Annual Meeting.—The program allows for a litlle more discussion this year than for some years past, but is still a very full one. Members purposing to attend should look this program over carefully and consider what subjects they would like to express an opinion upon and be prepared to participate in the discussions that follow the reading of the papers. The papers read at our meeting are short, a limit of 1,000 words being requested, which will give considerable time for discussions, that are likely to be the most interesting part of the session. The discussions are open to any one present to take part in, and absolute freedom in this respect is desired. Don't wait to be called upon by the presiding officer, but take the floor at once and give us briefly and concisely your thought on the subject under consideration.

The Minnesota Fruit Exhibit at St. Louis.—A letter received under date of Nov. 12th from Mr. Thoms Redpath, in charge of the Minnesota Fruit Exhibit at St. Louis, says on that day there are on exhibition with the state exhibit 165 glass jars of fruit, 497 plates of apples, 21 of grapes and 44 of cranberries, and speaking of the fruit on exhibition there he says, "We have nearly 500 plates of apples on exhibition, and it is nice fruit." A letter from Geo. W. Strand from the World's Fair, written a week earlier, says in regard to this exhibit, "I hear nothing but favorable remarks about our exhibit and fruit, and it surprises the majority when they see it is Minnesota, 'that far north.' " No fruit has been sent for the use of the Minnesota exhibit since Nov. 5th, and word from Mr. Redpath is to the effect that no more will be needed to maintain the exhibit till the fair closes. What is said here in regard to the Minnesota exhibit applies equally well to the newer feature of the exhibit, the windmill, heretofore spoken of, erected by the Jewell Nursery Company in September as a part of the state fruit exhibit. Evidently no single feature in Horticultural Hall is attracting as much attention as the windmill. It was a master stroke of good policy on the part of the commission in having this striking exhibit transferred from our state fair to the World's Fair. In an early number of our magazine, probably the January number, in connection with the publication of the report of the World's Fair exhibit, photographs of both of these Minnesota fruit exhibits will be published, which will give an opportunity to those of our readers who have not been privileged to attend the fair to see what Minnesota is doing for its horticultural department.

JOURNAL OF

Annual Meeting,

Minnesota State Horticultural Society,

DECEMBER 1-4, 1903.

TUESDAY MORNING SESSION.

The thirty-seventh annual meeting convened in the auditorium of the First Unitarian Church, Minneapolis, and was called to order at 10 o'clock a. m., by the president, Mr. Clarence Wedge, of Albert Lea.

The exercises were opened by an organ prelude rendered by Mr. E. A. Smith, of Lake City, which was followed by a vocal solo by Prof. Crosby Hopps, of Minneapolis.

The President: It seems especially fitting at this time, as we meet in this beautiful church, with the sacred and harmonious strains of the organ in our ears, and the sentiment of that song, which takes us back to the Beulah land of old associations, it seems especially fitting that this association, with the tender feeling of the glad Thanksgiving day still in our hearts, that we should invoke the divine benediction upon this gathering, and we will join with Dr. Simmons as he pronounces the invocation.

Prayer was then offered by Dr. H. M. Simmons.

President Wedge then formally opened the meeting with the following words of greeting:

Brethren of the Horticultural Society:

It is one of the greatest pleasures of my life to greet you this morning as your president. When I say brethren, I mean it in the fullest and broadest sense of the term. We want to inculcate a feeling of brotherhood. We mean it as a brotherhood. We mean to spread that feeling not only among the members of the horticultural society, but all over the state, what we might call a community of interests, such as is generally felt in these times.

I wish to say that one of the most important things we can do, and one that we ought to do, is to become acquainted with each other. We have a badge book, and your badges are all numbered, so that by referring to the book you may know the name of each wearer of a badge, and I want you to become acquainted with each other; I want you especially to make the younger members welcome and feel at home, and I wish to say to the older members that this duty devolves upon you.

I believe this is the largest attendance we have had at the opening of any meeting, especially so early in the morning. Let us take each other by the hand, let us inquire each other's names, introduce

the new members and make them feel at home. That is what the state is supporting us for, to encourage our effort and to encourage new effort.

I want to congratulate the society upon having secured this beautiful auditorium. We certainly could not have devised a more comfortable place in which to meet and do our business. Let us make the most of it, and let us rejoice that we are so fortunately situated. You will find all the conveniences here, cloak rooms, lavatory, a lounging parlor, a spacious fruit exhibit room below stairs, and we will not be disturbed by any one in that room unless they make more noise than they ever did before.

Perhaps I should say that I feel a good deal of hesitation in acting in this position. I have never attempted to preside over so large a body before, but I trust I shall have no difficulty in keeping you in order. I trust you will be patient with me. I distinctly appreciate the honor of following the two worthy men who preceded me. I cannot hope to say or do the fine things Mr. Underwood did for you; I cannot sing a song, nor can I show you the beautiful courtesy that is so characteristic of him. I need not speak of the good qualities and capabilities of our late departed president. He was a grand man in every way. I cannot hope to imitate that keen and beautiful humor of his and the many other pleasing characteristics that distinguished him as a presiding officer. And while I cannot imitate my immediate predecessors I trust you will help me in every way possible to make the duties of my position agreeable.

You will notice on the program that there is a ten minute limit noted on the program for all papers and addresses. That was the idea of the secretary, and I am not responsible for that feature. I do not want you to feel, therefore, that I am at any time acting upon my own suggestion. I am glad, however, it is there. It is just the very thing I would like to see carried out in the conduct of the program during the various sessions, especially among those of the rank and file, and particularly among the older members. Let us all be brief and concise, say what we have to say and be done with it. That is a very strong point in any man, to know when he is through with what he has to say upon a subject. Of course, we have visitors here, and we must ask them to be very patient if we have papers presented here that are of exceeding length. I think it is some of you older fellows who are inclined to transgress in that particular and monopolize the time too much. Let us have plenty of time for discussion. That is the life of the meeting, and therein lies the chief value in the presentation of a subject. The papers will all be published anyway, but we want the discussion.

Asking you again to be patient and indulgent with me as you have always been with your former presidents, we will proceed with the program.

The president appointed the following committee on credentials: Messrs. L. R. Moyer, A. A. Bost and H. H. Pond.

The President: Our general subject this morning is "Small Fruits," and I will call upon Mr. A. Brackett to open the topic with a talk on "Field Culture of Strawberries." (See index.)

Discussion.

The President: I think we have given this topic about all the time we can spare it, and we will now take up another along the same lines, and I will call upon Mr. Anderson to tell us about the growing of strawberries for home use and market.

Mr. G. A. Anderson, of Renville, then read a paper on the subject of "Growing Strawberries for Home Use and Market." (See index.)

Discussion.

The President: We will now change the subject somewhat, still continuing on small fruit, but we will now take up the blackberry, and Mr. Anderson will read a paper on that topic.

"The Blackberry Patch" was the subject of a paper read by Mr. Nils Anderson, of Lake City. (See index.)

Discussion.

The President: We now come to a very important feature of fruit growing, and that is the harvesting and marketing of the crop, and I will call upon Mr. Hawkins to read a paper upon that subject.

Mr. Alfred O. Hawkins, of Excelsior, then read a paper upon the subject of "Marketing and Harvesting the Small Fruit Crop." (See index.)

Discussion.

The President: We will now take up still another branch of small fruit growing, and that is the grape. Mr. Murray, of Excelsior, has had a long and successful experience in grape growing, and he will impart some of his information on that subject.

Mr. J. W. Murray, of Excelsior, presented a paper on the subject of "How I Grew Grapes." (See index.)

Discussion.

Prof. Green: I am sorry that the students from the school of agriculture cannot remain until the close of the session, but it will be necessary for them to leave at this time in order to get back in time for dinner. We would have had many more students here than we had this morning but for the fact that about seventy-five are attending the stock show at Chicago. About seventy-five came over this morning, and I think they have enjoyed the session. I had intended to have them go down in the basement and see the show of fruit, but it is not all set up yet, and I think those that are interested will take it in later in the week.

The President: We shall now change the subject somewhat and take up a more general line in horticulture, and I take pleasure in introducing Mrs. Ida B. Thompson, who will tell us about horticultural conditions as they exist at Duluth.

Mrs. Ida B. Thompson, of Duluth, then read a paper entitled, "Horticultural Improvements in Duluth." (See index.)

Discussion.

On motion of Mr. Taylor the meeting adjourned.

TUESDAY AFTERNOON SESSION.

The meeting was called to order at 2 o'clock by the president, Mr. Wedge.

The President: We will at once take up the program for the afternoon, and I will call upon an old resident for the first number. I presume a good many of the older members know that when Mr. Pond speaks of his father he is having reference to a noted Indian missionary, Gideon Pond, of whom most of you know or have heard, and Mr. E. R. Pond will now tell us something of early horticulture in the state.

Mr. E. R. Pond then read a paper on the subject of "Lights and Shadows of Pioneer Fruit Growing." (See index.)

Discussion.

The report of the committee on credentials being called for, Judge L. R. Moyer, chairman, reported the following named delegates entitled to represent their respective organizations: A. D. Barnes, Waupaca, representing the Wisconsin State Horticultural Society; P. J. Bentz, Woonsocket, S. D., South Dakota State Horticultural Society; P. Clausen, Albert Lea, Southern Minnesota Horticultural Society; representatives of local societies and visitors, Geo. J. Kellogg, Lake Mills, Wis.; A. J. Philips, West Salem, Wis.; Rev. C. S. Harrison, York, Neb.

On motion of Prof Green the report of the committee was adopted.

The President: We are very much interested in these delegates, and we would like to hear a word of cheer and encouragement from each one. I will call upon them in the order in which they were reported, and the first on the list is Mr. Barnes, of Wisconsin.

Mr. A. D. Barnes (Wis.): Mr. President and Fellow Horticulturists: We are very glad to be with you again, and I assure you that your meetings are and always have been very interesting to me, and the appearance of so many students from the school of agrisulture betokens to me that you have lots of young timber growing up, although you are classed among the prairie states. I have a formal report which I will submit later during the meeting, therefore I shall not take up any more of your time now. However, I would like to extend to you an invitation to meet with us in our annual meeting at Madison the first full week in February. I always enjoy the company of Minnesota friends, and I hope you may have a profitable and enjoyable meeting.

The President: The delegate from the South Dakota society is Mr. P. J. Bentz, who is also president of that society. The South Dakota society is especially near to us, since it it a daughter of this society. I will now call upon Mr. Bentz.

Mr. P. J. Bentz (S. D.): I see by the program that there are so many good things to be said here that it appears like a waste of time for me to speak at any length just now. I simply want to say that we in South Dakota are making a little progress. Among the things that indicate progression is the fact that we have just secured a law permitting us to publish our annual reports, a conces-

sion we have been trying to secure for a good many years without success. I know also that we are making some substantial progress in fruit growing. Throughout the entire state there seems to be a new awakening, and I think this has been largely brought about through the medium of this society. The conditions that prevail throughout the western parts of Minnesota are almost identical with those that exist in our part of the state, and through the courtesy of your society we have laid the foundation for future work in our state. I did not come prepared to speak, but simply to listen. I had the pleasure of attending your meeting last year, and I am sure I was well repaid, and I am certain also that every person is who attends these annual gatherings, whether in this state or any other state where the conditions are so thoroughly discussed and the way paved for the overcoming of the difficulties that confront the horticulturist. It seems to me the people cannot afford to miss the meetings. If I can be of any service in any way to the people of South Dakota by giving them the information I gain here I shall have accomplished a great deal. I do not wish to take up your time any further, but what I learn here I shall try to impart to our people.

The President: We are very glad to hear these words of cheer and hear of these signs of progress from our sister state to the west, and now we will hear something from the east. I need not introduce to you Mr. Kellogg, because he seems like one of our own members, but we want to hear just a word from him this afternoon.

Mr. Geo. J. Kellogg (Wis.): I am not going up on the platform and show myself like Barnes did, because I am not so handsome. I am troubled the same way Philips is, I talk too much. I do regret that you did not give us more time on small fruits, and I would suggest that any one who wishes to put in a criticism or offer a suggestion do so by putting it in writing and handing it to the secretary that it may be published in the report. I think in that way you can get a good deal of valuable information that would otherwise be lost. I wanted to butt in three or four times on strawberries, but there was no time, and I do not want to take the time now to tell you all I know. (Laughter.)

The President: I hardly dare to call on Mr. Philips since what Mr. Kellogg has told us, but if he will tell us one story and then promise to sit down we will give him a chance. (Laughter.)

Mr. A. J. Philips (Wis.): I don't need any introduction; I can do the introducing myself. I would like to say a word that I would have preferred to say while the young people were here, and that is about that tree you see standing there. (Indicating.) But Prof. Green is going to take it over to the school and put it in his museum. I have talked top-working considerably in years gone by, and I have had many different questions asked about grafting and budding, and I would say again I would use the Virginia every time. One man said in an Iowa paper a year ago that there is nothing gained by top-working, and said he would like to see some evidence of its making the tree hardier or of its being any advantage whatever. I told him this, that I planted a row of Wealthy, and then a row of Virginia crab and top-worked them with Wealthy. Those crab trees have been growing eighteen years, and the Wealthy on

their own roots are dead. It satisfied me that the Virginia makes a hardier stock and the trees live longer. My object in working on the Virginia was to avoid the Wealthy crotches. During the time I am here if you have any questions to ask I shall be glad to answer them if I can. That work has been to me next to my children. Prof. Goff said it was the nicest specimen of work done at one time he had even seen. Latham gave me fifteen minutes to talk, but this does not come out of the fifteen minutes. (Laughter.) There's no use telling you I am glad to be here, because if I wasn't I wouldn't be here. (Applause.)

The President: Mr. Clausen, the delegate from the Southern Minnesota society, is now present, and I will call upon him for a word. This is the first time we have had the pleasure of greeting Mr. Clausen in any of our meetings, and I hope he will feel perfectly at home.

Mr. P. Clausen: I am very glad to be here and to have the opportunity of participating in the deliberations of this meeting. I sometimes think I was born a horticulturist. I do not know whether it runs in the blood or not, but I came to this country some thirty-three years ago, and after being here a couple of years, being then a young man of about twenty, I bought myself a couple of lots, and the next thing I did was to buy some trees and plant them upon my lots. I bought some apple trees from the Jewell Nursery Company, and I planted those trees with the expectation of making that property my future home. I expected to get a wife some time. I do not know whether the trees are alive now or not, I have not seen them for several years, but when I think of it I feel I have nothing to regret, and I believe it would be a great deal better for a young man to invest his money in that way than to use it as many young men do at the present day. There are a good many young men here this afternoon, and I want to say to them that when I had a little time in the evening I did not hang about the stores or the streets, but I put it in working on my lots. I had some flowers there that I cultivated for my own pleasure, and then I also had those apple trees. I might keep on telling you of the progress I made in horticulture, but I am not here to represent myself, but to represent the Southern Minnesota Horticultural Society, which is a daughter of this organization. I might also mention at this time that a granddaughter has been born during the past year. I presume some one will be here to represent the interests of the granddaughter so I will say nothing about her at this time. As far as the Southern Minnesota society is concerned you can very nearly judge of what we are doing and what progress we are making by the papers which appeared during the year in the Horticulturist, of which I believe there were twelve. We had in our little city a very interesting meeting of the society, quite largely attended, and we also had the great pleasure of having Mr. Philips with us. I do not know how we would get along without him. We had quite a number of brethren from our sister state of Iowa, and altogether we had a very interesting meeting and a very fine display of apples. If I were asked my opinion as to what is going to be the coming winter apple I should say the Yahnke.

I like to attend these horticultural meetings because I get a great deal of valuable information every time I attend, and I can see by looking over this audience that there are many men here who are in a position to impart a great deal of information. It is something like going to school, and it is a good thing to go to school. I have not attended school very much in my lifetime, but there is one school I consider superior to most schools, and that is the school of experience, and when I come to a horticultural meeting and look over the audience sprinkled with gray heads, I know they have been through that school of experience and that I can learn something from them. Some of them have already passed beyond the gates, but they have left the record of their experience behind them, but many of them are still with us and we have the privilege of hearing their many and varied experiences from their own lips, and I know we shall all profit thereby. Another thing I wish to say before I close, and that is to urge the young people to attend these meetings. If they intend to follow horticulture as a pleasure or as a business pursuit they can secure no more valuable information anywhere than they can by attending these meetings. I have said much more than I ought to have said, and I need not say to you that I am glad to be here, and that I trust we may have a very profitable meeting. (Applause.)

The President: I think it is a very rare occurrence that we have the pleasure of meeting a delegate from Nebraska in our annual gathering, but we have that privilege today. We all know some of the Nebraska horticulturists and know something about their work, but those who are not acquainted with any other representative of Nebraska horticulture will remember the name of Rev. C. S. Harrison, of York, Neb., who in both the spiritual and horticultural field was a missionary, who was once a resident of our own state, and whom I take pleasure in introducing as the "silver tongued" exponent of good horticulture.

Rev. C. S. Harrison (Neb.): I also am sent as a delegate from the Nebraska Horticultural Society, and I bring you greetings from our great state of Nebraska. I hope I shall have a pleasant time with you.

The President: We have another representative from South Dakota, whom we regard, however, more as belonging to us than to our sister state. A meeting of this society without the presence of Prof. Hansen would be like the play of Hamlet with Hamlet left out. Prof. Hansen, we want to hear a word from you.

Prof. Hansen (S. D.): In behalf of South Dakota I wish to present to you Mr. Bentz who will tell you all you want to know. It pays him to come over here and listen to these gray heads and white heads and other colored heads who relate their experiences, and it always pays me to come, and if I can add anything in the way of our South Dakota horticultural experience I shall be happy to do so.

The President: I think this concludes the list of delegates and visitors we have had reported to us, and I trust they will all feel perfectly at home, take part fully and freely in our discussions and enjoy themselves as much as possible.

We will now take up the regular program where we left off, and I will call upon Mr. Elliot for a continuation of his valuable "chop talk" of last year.

Mr. Wyman Elliot, of Minneapolis, then read a paper under the title of "Chop Talk No. 2." (See index.)

Discussion.

The President: We will now take up a subject that is of great importance, although it is a much disputed subject. Mr. Pond will tell us something about mulching.

Mr. H. H. Pond, of Minneapolis, then submitted a paper on the subject of "Mulching." (See index.)

Discussion.

We will next take up a topic that will probably interest a good many who grow vegetables for market. I think Mr. Bailey can tell us all about growing melons for market.

"Raising Muskmelons for Market" was the title of a paper read by Mr. J. V. Bailey, of Newport. (See index.)

Discussion.

The president appointed the following committees:

President's Address. Prof. Wm. Robertson, C. E. Older, J. L. Tiegland.

Obituary. C. M. Loring, R. A. Wright, Dewain Cook.

Final Resolutions. A. Brackett, D. M. Mitchell, H. H. S. Rowell.

COMMITTEES ON AWARDS.

Grapes, J. W. Murray.

Flowers, Mrs. Ida B. Thompson.

Apples in cold storage, W. L. Parker.

Apples not in cold storage, J. P. Andrews.

Peck Wealthy apples, W. L. Taylor.

Seedling apples, Wyman Elliot, Prof. S. B. Green.

The President: We will now proceed with the program, continuing the consideration of garden vegetables, and I will call upon Mr. Peabody to give us his experience with asparagus.

Mr. E. F. Peabody, of Minneapolis, then read a paper under the title of "Asparagus for the Home Garden." (See index.)

Discussion.

The President: We now come to the last number on the program for the afternoon. We all like to hear of the experiences of others, and I believe no one is more competent to detail many and varied ventures than Mr. Cook.

Mr. Dewain Cook, of Jeffers, responded by reading a paper entitled "Horticultural Ventures, Wise and Otherwise." (See index.)

Discussion.

On motion of Mr. Elliot the meeting adjourned.

WEDNESDAY MORNING SESSION.

The meeting was called to order at 9:30 by the president, Mr. Wedge.

The President: Following a custom inaugurated by my predecessors I presume it is necessary for me to present what is termed the annual address of the president, and as that is the first number on the program this morning we will take it up at this time.

President Wedge then submitted his "Annual Address." (See index.)

Discussion.

A motion of Mr. Gibbs, seconded by Mr. Wyman Elliot, to appoint a committee to consider the matter of securing a permanent home for the society was put to a vote and prevailed unanimously.

The President: We now come to the annual reports of committees and superintendents of trial stations. I will first call upon Mr. Elliot for the report of the executive board, of which he is chairman.

Mr. Wyman Elliot then submitted the annual report of the Executive Board. (See index.)

Following this report Mr. Elliot also presented the report of the Legislative Committee. (See index.)

On motion of Prof. Green the reports made by Mr. Elliot were unanimously adopted.

The President: Following these reports we come next to the annual report of the secretary, which usually proves a very interesting document.

Mr. A. W. Latham then read his annual report as secretary of the society. (See index.)

On motion of Mr. Taylor the report of the secretary was unanimously adopted.

Discussion.

Mr. Elliot: I think there should be some action taken by the society to raise that Gideon fund up to $500, and I hope some of the members will think up a scheme whereby that may be done.

Mr. C. M. Loring: The secretary's report is a very interesting one, and the portion relating to the office and the facilities there is something which it seems to me should be taken up by the society at once. There certainly is not room enough in that little office to take care of the business of this great organization, and some arrangement should be made whereby a larger room or two rooms might be secured. It seems to me the secretary should have a private room where he could have his desk and transact his business, and have the library and other things in an outside room. The secretary is very economical, and he is conducting the business of the society in a manner that entitles him to a great deal of credit. But it seems to me where so many people come to the office as is the case in his office, I think the society should provide more room, and to that end I want to make a motion that the secretary be requested to look about to see if an office might not be secured at a rental not to exceed $20 per month which would provide better and more ample accommodations.

The motion was duly seconded and, being put to a vote, prevailed unanimously.

The President: Since yesterday afternoon some more delegates from neighboring states have arrived, and we would be very glad to hear from them as we did from the others. I presume the committee on credentials has found them duly accredited delegates, and we are very glad to welcome them. I first want to introduce to you Mr. A. F. Collman, of Corning, Iowa, who represents the Iowa State Horticultural Society. Mr. Collman is not an entire stranger to us, having visited one of our meetings a number of years ago.

Mr. A. F. Collman (Iowa): I am very glad to have the opportunity to be present at this meeting. I am sorry I left my credentials at the hotel, but I assure you they are all right. I have been very much pleased to listen to your reports, and I am very glad that you have such a live society. I have been acquainted with your secretary ever since the World's Fair. I know him to be an honest, worthy and true gentleman, and I believe he is a fair representative of your people here. I am very glad to be here, and will try to carry home to our people whatever information I may gain at this meeting.

The President: We also have with us Mr. J. B. Mitchell, of Cresco, Iowa, representing the Northeastern Iowa Horticultural Society. I will ask Mr. Mitchell to come forward that we may see his face again and hear a few words from him.

Mr. J. B. Mitchell (Iowa): Mr. President, I am really pleased to be here once more. The faces in the audience are not all strange to me. I have been in this place before. I have always taken an interest in Minnesota horticulture, and I am so near the border that our interests are almost identical, especially in the southern part of your state. I formerly advocated the Russian apples very strongly and still have a great deal of faith in them. I was down below in the exhibit room, and I was wonderfully surprised to see the large showing of apples at this season of the year, and, by the way, I noticed a great many Russians down there. I am pleased to see this society growing as rapidly as it does. I have always enjoyed myself here, and I think this occasion will be no exception. I may have something more to say before the close of the meeting.

The President: We also have with us Mr. C. G. Patten, of Charles City, Iowa. Mr. Patten is very near to us, and I know we would all be pleased to have him come up here on the platform and let us see his face once more.

Mr. C. G. Patten (Iowa): I do not know that I have very much to offer, but the thought suggested itself to my mind in coming into the room this morning and seeing only a few members here, and noticing that the presiding officer was delivering his annual address, I say the thought occurred to me that it might have been better, or I might have wished that that address might have come a little later on the program when there was a larger attendance. I do not offer this as a criticism in any sense, but it seems to me that a man occupying the position of president of so large an organization as this, and as it should be considered the principal address delivered before the society, it seems to me it should be delivered at a time when there is a more representative attendance

here than there is at present, or than there was at the time the address was delivered. I do not know that I have any further remarks to offer, only to say that I am very highly pleased to meet so many of my old friends here that I have met with before.

Sec'y Latham: Mr. Patten hits me pretty hard, but we have a way of putting our best foot forward, and so we put the president's address on as the first number on the morning's program, but I am becoming pretty thoroughly convinced that when people come to Minneapolis to attend any convention something happens that keeps them up late at night, and as a consequence they are late in getting here in the morning. I think we shall have to change the location of the president's address on the program hereafter.

The President: We will now continue the reports, and I will call upon Mr. Lyman for the treasurer's report.

Mr. A. B. Lyman, of Excelsior, then submitted the annual report of the treasurer. (See index.)

On motion of Mr. Older the report was unanimously adopted.

The President: We are now ready to listen to the reports of the vice-presidents of the various congressional districts. I will call for the report from the First Congressional District.

The following reports were then submitted by the vice-presidents of their respective districts:

First District, Mr. Frank Yahnke, Winona. (See index.)
Third District, A. H. Reed, Glencoe. (See index.)
Fifth District, R. A. Wright, Excelsior. (See index.)
Sixth District, W. L. Taylor, Howard Lake. (See index.)
Seventh District, D. T. Wheaton, Morris. (See index.)

The President: This completes the reports of vice-presidents as far as they are present, and I think the society has reason to congratulate itself upon the improvement and the progress shown by these particular reports.

We will now take up the reports of superintendents of trial stations, and instead of following the program I will call upon Prof. Green last instead of first, and I will ask Mr. Cashman to present his report.

The superintendents present from the various stations then submitted the following reports:

Thos. Cashman, Owatonna. (See index.)
Dewain Cook, Jeffers. (See index.)
A. B. Lyman, Excelsior. (See index.)
L. R. Moyer, Montevideo. (See index.)
Mrs. Jennie Stager, Sauk Rapids. (See index.)
J. S. Parks, Amboy. (See index.)
F. J. Cowles, West Concord. (See index.)

Prof. Green: Mr. Lord is one of the oldest members of this society, a life member, and I think it would be a pleasing thing to do to send him greetings and expressions of regret that he is not here, and I would move that a telegram embodying such sentiments be sent to Mr. Lord.

The motion was put to a vote and prevailed unanimously.

The President: I will delegate Prof. Green to prepare and send such a message as has been proposed.

The President: The statement made by Mrs. Stager in her report in regard to the Martha crab again brings out the point that any fact in horticulture supposed to be firmly established may be successfully contradicted. (Laughter.)

The President: We will now listen to the report from the Central Station by Prof. Green.

Prof. S. B. Green, of St. Anthony Park, then submitted a report from the Central Trial Station. (See index.)

The President: As it is getting somewhat late, and we have a number of reports still on the program, we will omit two reports and take up the report on packages and marketing. I believe Mr. R. A. Wright is chairman of that committee. (See index.)

Discussion.

The President: I want to ask Mr. Elliot whether he is ready to report on the Gideon Memorial Fund.

Mr. Elliot: About all there is to be said was embodied in the report of the secretary, and unless Prof. Green has anything further to add I have nothing to report.

The President: Then we will next pass to the report of the committee on the Harris Memorial Fund, of which Mr. S. M. Owen is chairman. (See index.)

The President: I presume the members present have all observed the tablet in bronze in the corner of the room, and I am sure we are all very much gratified to have such a beautiful and lasting memorial of Mr. Harris.

On motion of Mr. Parks the meeting adjourned.

WEDNESDAY AFTERNOON SESSION.

Owing to the sudden summons to the president, Mr. Wedge, the meeting was called to order at 2 o'clock by the secretary, Mr. Latham, who called Prof. Green to the chair to act as president pro tempore.

The Chairman: It is a matter of regret to me that the president has been called away, and at the same time I esteem it an honor to be called to preside over this meeting.

Without any further preliminaries we will take up the regular order of the program, and I will call upon Mr. Rowell, if he is present, to read his paper.

Mr. H. H. S. Rowell, of Minneapolis, then read a paper entitled, "Minnesota as an Apple State." (See index.)

The Chairman: I know you have all heard of Mr. Harrison, know of him and have read his writings in the various agricultural papers, and we will now have the pleasure of listening to an address by Rev. C. S. Harrison, of York, Nebraska. Mr. Harrison is president of the Park and Forestry Association of Nebraska, and has not only been a missionary in the Christian church in Nebraska and Minnesota, but also a pioneer in horticulture. I now have the pleasure of introducing him to you.

Rev. C. S. Harrison, of York, Neb., then delivered an address upon "The Forward Movement in Horticulture." (See index.)

WOMAN'S AUXILIARY.

The meeting of the Woman's Auxiliary was called to order by the president, Miss Emma V. White, at 3 o'clock.

The President: As the time is beyond the appointed hour on the program we will not take up any time with preliminaries, as we have a full and, I trust, an interesting program. It was even said last year that the meeting of the Woman's Auxiliary was the best of the entire session, and I hope we may again merit your approval.

The "President's Greeting" was then presented by Miss Emma V. White, the president. (See index.)

The President: As our secretary, Mrs. Anna B. Underwood, is in California at this time, we shall necessarily have to dispense with the report of the secretary.

The next number on the program is a paper by Mrs. Loring. We all know of Mr. Loring's love for and interest in horticulture, especially the ornamental side of it, and we are not surprised that Mrs. Loring should have imbibed some of his interest and enthusiasm.

"Our Cousins, the Trees," was the title of the paper presented by Mrs. Florence Barton Loring, of Minneapolis. (See index.)

The President: We had the great pleasure of once listening to Mr. Harrison this afternoon, and I presume we are all glad that he appears on the program again, although speaking on a different subject. As he is one of the greatest authorities on this topic we are all eager to hear him.

Rev. C. S. Harrison, of York, Neb., then presented a paper treating of "Peonies." (See index.)

Discussion.

The President: I think we have all been very much entertained and instructed by this excellent paper.

We will now take up another subject that is of the greatest interest and importance to us all, and I know of no one who is more competent to speak upon it than Mrs. Hudson, whom I take pleasure in introducing to you.

Mrs. J. B. Hudson, of Lake City, then read a paper on the subject of "Protection of Song Birds." (See index.)

Discussion.

The following resolutions were offered by Mr. S. A. Stockwell, of Minneapolis, and unanimously adopted: Whereas, there is much danger that some of the most valued friends the horticulturist possesses, the birds, will be destroyed, and whereas their destruction is largely due to the ignorance and indifference of our adult population coupled with the thoughtlessness of young boys and so-called sportsmen, and, whereas, one of the most effectual means of informing the citizens of our state upon this subject is the public school. Therefore, be it resolved, that this matter be brought to the attention of the approaching State Educational Association. That a committee of five be appointed by the Minnesota State Horticultural Society to present this resolution to said association, and urge it to adopt some immediate plan to systematically educate the children of our public schools on this important matter.

The President: We have another paper on the program right along this same line, and it is written by a man whom we all know to be a great friend of birds. I will ask Mr. Gibbs to read his paper.

Mr. Oliver Gibbs, of Prescott, Wis., then presented a paper entitled "Our Summer Boarders—The Birds." (See index.)

The president appointed the following committee to present the matter of the protection of birds to the Educational Association of Minnesota: Mrs. J. B. Hudson, Prof. F. L. Washburn, Mrs. E. M. La Penotierre, S. A. Stockwell, Mrs. Ida Thompson.

The President: The subject on our program becomes somewhat changed now, and we take up the matter of home and school improvement. As you all know, Mrs. Barnard has done some excellent work in this city in connection with home and school improvement, and she will tell us something about that work in some Minneapolis homes that has been done this past summer.

"Some Improved Home Grounds in Minneapolis," was the title of the paper presented by Mrs. M. M. Barnard, of Minneapolis. (See index.)

The President: I am very sorry that our limited time does not permit us to discuss this most excellent paper, but as we still have two more papers on the program we must make the most of our time, and I will call upon Mr. Nutter to read his paper.

Mr. F. H. Nutter, of Minneapolis, then read a paper on the subject of "Improving School Grounds." (See index.)

Discussion.

On motion of Mr. Gibbs the meeting adourned.

THURSDAY MORNING SESSION.

The meeting was called to order by the First Congressional District vice-president, Mr. Frank Yahnke, at 9:30 o'clock.

Vice-Pres. Yahnke: I am very sorry to hear that our president was called away under such sad circumstances. I feel somewhat indisposed today and am not in a proper condition to conduct this meeting, and I will therefore ask Prof. Green to take the chair.

Prof. Samuel B. Green: I believe Mr. Yahnke could handle the meeting very well, but since it is his wish, and he has requested me to do so I will take charge of the meeting.

The Chairman: We will take up the first number on the program this afternoon, and that is a paper by Mr. Older. This subject of evergreens is one that we are all interested in.

Mr. C. E. Older, of Luverne, then read a paper entitled, "The Pines and Their Comparative Value in Minnesota." (See index.)

Discussion.

The Chairman: Although this number is not on our program, Mr. Barnes has a report from the Wisconsin Horticultural Society which I am going to ask him to present now. I know we shall all be glad to hear what they are doing in Wisconsin.

Mr. A. D. Barnes, of Waupaca, then submitted a "Report of the Wisconsin State Horticultural Society." (See index.)

Discussion.

The Chairman: We will now take up a report that was deferred from yesterday morning, the report on the ornamental list, and as the chairman, Mrs. Underwood, is not present I will ask Judge Moyer to make the report.

The "Report of the Committee on Ornamental List" was then submitted by Mr. L. R. Moyer. (See index.)

Discussion.

The Chairman: I wish to introduce to you a gentleman who is well known to many of you. Over in Wisconsin they have a secretary that is able to hold the "cranky" fellows well in hand, and we would all like to know a man who is able to do that. We would like to hear from Mr. Herbst.

Mr. J. L. Herbst (Wis.): I did not come up here with the idea of making any speech at all, because I, somewhat like your secretary, am very modest and retiring when I am away from home. There is one thing that impressed me particularly when I came into the room yesterday afternoon, and that is the great number of young faces in the audience. It has always been a question with me what we would do when such men as Philips, Yahnke, Kellogg and other good and great-hearted men are gone. I am glad to note that your society as well as the Wisconsin society is exerting its influence in the direction of drawing in the younger element. I am sorry I did not get up here a little earlier. I understood there were several prominent Wisconsin horticulturists coming up here, and I mistrusted there was something wrong. Some time ago your secretary asked me what we did in Wisconsin when they talked too long. I told him we shut them off. I imagine Kellogg and Philips and Barnes came up here because they thought since they were visitors they could talk as much as they pleased, and they would not be shut off. Then I imagine they are up here for another purpose also. Every winter at our state winter meeting they always have a nice display of fruit. I was down stairs looking over your display of fruit, and I think I shall stay to see that none of those apples are lugged off. That is all I have to say. (Laughter and applause.)

The Chairman: We are very glad to hear from Mr. Herbst, and glad to see so many of our Wisconsin friends.

We did not have time yesterday to take up Mr. Latham's paper dealing with the horticultural exhibit at the St. Louis exposition, but I think right now is a good time to hear from Mr. Latham.

Secretary A. W. Latham then made a detailed statement concerning "The Minnesota Horticultural Exhibit at the Coming World's Fair at St. Louis." (See index.)

The Chairman: I am going to call on the committee on seedling fruits for a report. Since Mr. Elliot is unable to be here this morning I am going to ask Mr. Strand to read that report.

The "Report of the Committee on Seedling Fruits" was read by Mr. Geo. Strand in the absence of the chairman, Mr. Elliot. (See index.)

Discussion.

The Chairman: I see Mr. Gregg is now present, and I shall ask him to read his paper. Mr. Gregg knows what he is talking about

because he has had the experience to back him up.

Mr. O. C. Gregg, of Lynd, then spoke briefly of "Some Successful Trees for Southwest Minnesota."

The Chairman: I think we are now ready to hear the report of the committee on fruit list, and I will ask Mr. Cashman to make that report.

Mr. Thos. E. Cashman, in behalf of the committee on fruit list, submitted a report. (See index.)

Discussion.

On motion of Mr. Cashman the fruit list was unanimously adopted as read.

The Chairman: We will now have the pleasure of hearing from Mr. Barnes, of Wisconsin. Mr. Barnes is competent to speak on the subject for which he is down on the program, and I am sure we shall all be interested in what he has to say.

Mr. A. D. Barnes, of Waupaca, Wis., then presented a paper on the subject of "Northern Apple Seedlings and the Great Good They Are Doing." (See index.)

Discussion.

The Chairman: We now change the subject to plums, and Mr. Hynson will give us his experience.

Mr. R. E. Hynson, of Mankato, read a paper under the title of "My Plum Orchard." (See index.)

The Chairman: I am very sorry that we have not the time to discuss this most excellent paper, but I am sure we all appreciate the value of the experience of Mr. Hynson.

The chair appointed the following Committee on Permanent Home for the Minnesota State Horticultural Society:

C. M. Loring, Minneapolis; O. C. Gregg, Lynd; S. M. Owen, Minneapolis; L. R. Moyer, Montevideo; W. H. Dunwoody, Minneapolis.

THURSDAY AFTERNOON SESSION.

The meeting was called to order at 2 o'clock by the temporary chairman, Prof. Green.

Mr. E. A. Smith, of Lake City, rendered a funeral march on the organ, which was followed by a vocal solo by Mr. Crosby Hopps, of Minneapolis.

Mr. C. M. Loring offered the following resolution:

Resolved, That it was with sincere regret and profound sorrow that the members of the State Horticultural Society learned of the death of three of their oldest and greatly honored associates, Prof. W. W. Pendergast, late president, E. H. S. Dartt and Jas. T. Grimes.

Resolved, That this association extend to the family of each, sincere condolence in their bereavement.

Resolved, That, as a mark of respect to the memory of our deceased friends, the business of the association be now suspended to enable their associates to pay fitting tribute to their high character and their valuable services in the cause of horticulture.

Resolved, That the secretary transmit to the family of each of our departed friends a copy of these resolutions.

On motion of Mr. Loring the resolution was unanimously adopted.

The Chairman: This is an hour that is sacred to the memory of our friends in horticulture that have passed away during the past year. We have had three deaths in our society of members who have performed great services in horticulture in this state, and we are to refer to their work and to their lives at this time. The works of all of these men have been so eminent that they will live after time, and will go on to bless future generations. We have a number of friends to call on this afternoon, some who have known these men for many years. The first one I will call upon is Hon. S. M. Owen. (See index.)

The Chairman: I will call upon Mr. Loring to add his tribute to these departed friends on this occasion. (See index.)

The Chairman: I am going to call on Mr. A. J. Philips to say a few words on this occasion. (See index.)

The Chairman: Mr. O. C. Gregg is with us, he knew the men whose memories we honor today, and I will ask him to say a few words about them. (See index.)

The Chairman: We will now have to draw these very appropriate and inspiring exercises to a close. I know there are others here who would like to speak and to whom we would be only too glad to give the opportunity, but the time set apart for this portion of the program has expired, and we will close this memorial hour with a song by Prof. Crosby Hopps.

The Chairman: We will now resume the regular order of the program.

The Secretary: I have here some resolutions relating to the Board of Regents of the State University, which have been handed me, and which I will place before the society. (See index.)

Discussion.

On motion of Mr. Latham the resolution was adopted.

The secretary also read the following resolution relative to the proposed discontinuance of the Owatonna trial station, etc.:

To the Honorable Board of Regents, State University of Minnesota:

Resolved, That as an association representing great agricultural and horticultural interests in this state we recognize in the Agricultural Department of the University of Minnesota a great aid to the advancement of our state agricultural and horticultural interests generally, and we thoroughly endorse the educational work it is now doing.

Resolved, That we are greatly pleased at the liberal treatment which this department of our university received at the hands of our legislature last winter.

Resolved, That we are surprised to learn that some of the members of the Board of Regents of our State University are opposed to the continuance of the Owatonna Tree Station.

Resolved, That we heartily endorse the work of the Owatonna Tree Station and are opposed to its being discontinued unless the work now being done there shall be removed to a more suitable loca-

tion where it can be continued on a much larger scale and in a manner commensurate with the growing horticultural interests of the state of Minnesota.

Resolved, That we consider the region of Lake Minnetonka, on account of its natural advantages, nearness to the central station and ease of access therefrom, as especially well located for an orchard trial station, and would call your attention also to the fact that the expense of installing a station there would be much more than met by the profits accruing to the Board of Regents from the sale of the property formerly used as an orchard trial station in that region.

On motion of Mr. Latham the resolution was unanimously adopted.

Mr. C. M. Loring submitted the following resolution:

Resolved, That the secretary of the Minnesota Forestry Association is hereby requested to prepare a bill to be presented to the state legislature providing for bounties for tree planting on the public highways throughout the state.

On motion of Mr. Loring the resolution was unanimously adopted.

ELECTION OF OFFICERS.

The time for the election of officers having arrived, tellers were appointed and ballots taken with the following result: (See index.)

MINNESOTA STATE FORESTRY ASSOCIATION.

The annual meeting of the Forestry Association was called to order by the president, Mr. C. M. Loring, who immediately opened the program by reading the "Annual Address by the President." (See index.)

Discussion.

Pres. Loring: We have with us today Gen. C. C. Andrews, State Fire Warden, and we shall be glad to hear anything he may have to say.

Address by Gen. C. C. Andrews, St. Paul. (See index.)

Pres. Loring: We always expect to hear from Mr. Owen in a forestry meeting, and I take great pleasure in calling upon him at this time. (See index for address of S. M. Owen.)

Pres. Loring: We are very fortunate to have with us today a lady who has been of very material and valuable aid in this forestry movement, and to whom we had the pleasure of listening two years ago upon this same subject. I take pleasure in calling upon Mrs. W. H. Bramhall, of St. Paul, for a few remarks. (See index.)

Discussion.

Mr. Chapman then introduced the following resolution, and on his motion it was unanimously adopted:

Resolved, that the Minnesota Forestry Association does hereby most respectfully request and urge each and all of our representatives in Congress to prepare, present and use all honorable means to have passed at as early a date as possible, a bill paying the Indians for the pine to be left standing for reforestation purposes, and providing for payment for timber and lands reserved under the so-

called "Morris Bill," and to do any other acts and things necessary or advisable to render said law operative and effective.

Resolved, That the secretary of this association is hereby instructed to at once send a copy of these resolutions to each of our said representatives.

Pres. Loring: We also have with us a gentleman from a neighboring state who is deeply interested in this question of forestry, and who is doing valuable work in his own state. We would like to hear from Rev. C. S. Harrison, of Nebraska. (See index.)

Pres. Loring: I entirely overlooked the name of a gentleman who is down on the program and who is no stranger to you. A forestry meeting would not be complete unless we heard from Prof. Green. (See index for remarks by Prof. S. B. Green.)

Pres. Loring: This concludes our program, and I think we have had a very interesting meeting. It has been so to me, at least.

The report of the secretary and treasurer was then read, after which the election of officers took place with the following result:

President, Chas. M. Loring, Minneapolis.
First vice president, S. M. Owen, Minneapolis.
Second vice president, O. C. Gregg, Lynd.
Secretary and treasurer, W. T. Cox, St. Anthony Park.

On motion of Prof. Green the meeting adjourned.

FRIDAY MORNING SESSION.

The meeting was called to order at 9:30 o'clock by the president pro tempore, Prof. Green.

The Chairman: There are several committees to report, but as they are not yet ready we will take up the program of papers. The general subject for this morning is "Nursery Topics," and the first number on the program is a paper by Mr. Roy Underwood.

Mr. Roy Underwood, of Lake City, then read a paper on the subject of "Apple Stocks: the Best Kind, and the Best Method of Growing." (See index.)

The Chairman: As some of these subjects are so intimately associated I will call for Mr. Collman's and Prof. Hansen's papers before taking up the discussion. In this way we will save time and discuss the subject all at one time.

"Whole Root versus Piece Root Grafts" was the subject of the paper presented by Mr. A. F. Collman, of Corning, Iowa. (See index.)

This paper was immediately followed by one from Prof. N. E. Hansen, of Brookings, S. D., entitled "The Pyrus Baccata as a Stock in the Nursery Row and Elsewhere." (See index.)

Discussion.

The Chairman: We have given a long time to the discussion of these papers, and the discussion has been very interesting, too, but we have other papers on the program that ought to be valuable and bring out a similar discussion. I think I will call on Mr. Taylor for his paper.

Mr. W. L. Taylor, of Litchfield, then read a paper on "Making and Planting the Root-Graft." (See index.)

Discussion.

The Chairman: About all of our time this morning has been given to the consideration of the apple; now we will change the subject and take up the plum, and Mr. Cashman will read a paper on the propagation of the plum.

"Best Methods of Propagating the Plum" was the subject of a paper read by Mr. Thos. E. Cashman, of Owatonna. (See index.)

Discussion.

The Chairman: We would be very glad to continue this discussion, but we have a long program this morning, and there may be people here who are just as much interested in what Mr. Higbie is going to bring out in his paper as they are in plums, and I will call on Mr. Higbie.

Mr. W. S. Higbie, of Washburn, then read a paper on the subject of "Practical Methods of Dealing with Weeds in Nursery Culture." (See index.)

Discussion.

The Chairman: Our next number on the program I know will prove of great interest, judging by the discussion we had the other morning. Almost everybody is interested in evergreens, and I know of no one who is more competent to speak upon the subject than Mr. Norby.

Mr. A. Norby, of Madison, S. D., then read a paper on the subject of "Latest Experience with the Rarer Conifers." (See index.)

Discussion.

The Chairman: Mr. Norby is full of valuable experience with these conifers he is trying to grow in the trying situations of South Dakota, and we ought to take occasion to pump him thoroughly to get all the information possible. However, it is almost time for adjournment, and we still have two more papers on the program. I hope we may be able to get back to this subject again during the meeting. I see Mr. Webb, of "The Farmer," is here, and I will ask him to read his paper.

Mr. E. A. Webb, publisher of "The Farmer," St. Paul, then read a paper on the "Responsibility of the Agricultural Press as Between the Nurseryman and the Public." (See index.)

The Chairman: This was a most excellent paper that Mr. Webb presented, and I know you would be glad to discuss it, but we will have just time enough to hear Mr. Hunter's paper which, I am sure, will also prove very interesting.

"Selling Trees" was then presented by Mr. C. C. Hunter, of Minneapolis. (See index.)

Discussion.

On motion of Mr. Thos. Cashman the chairman was instructed to appoint a committee of three to draft suitable resolutions upon the death of Mrs. Clarence Wedge.

The chair appointed as such committee Messrs. Thos. Cashman, C. M. Loring and Wyman Elliot.

On motion of Mr. Taylor the meeting adjourned.

FRIDAY AFTERNOON SESSION.

The meeting was called to order at 2 o'clock by the chairman, Prof. Green.

The Chairman: We have a long and very interesting program this afternoon, and without any further preliminaries we will take it up at once. I will first call on Mr. Dike, of White Bear, who has a fine orchard and is in a position to give us some very valuable experience.

Mr. C. C. Dike, of White Bear, then read a paper on the subject of "Starting an Orchard—Six Years' Experience with 1,100 Trees." (See index.)

Discussion.

The Chairman: I think we will leave Prof. Robertson's paper for a little while, and I will call upon Mr. Busse.

Mr. H. F. Busse, of Minneapolis, then gave his views upon "Apple Orcharding in Minnesota." (See index.)

Discussion.

The Chairman: This has been a very interesting discussion, and when we have a chance to question a man of Mr. Busse's experience we usually obtain some pretty valuable information. We have heard what has been done with orchards that are already planted and bearing, and now we will ask Mr. Poore to tell us about the coming apple orchard.

Mr. Hamlin V. Poore, of Bird Island, then read a paper entitled, "The Successful Apple Orchard of the Future." (See index.)

Discussion.

The President: We have given about all the time possible to the consideration of this subject, and we must pass on to the other numbers on our program. We will now take up a subject that ought to interest the average farmer, and I think Mr. Mitchell will give us some valuable information in regard to orchards on the farm.

Mr. D. M. Mitchell, of Owatonna, then read a paper on the subject of "Possibilities of Commercial Orcharding on the Farm." (See index.)

Discussion.

The Chairman: This is a very interesting and valuable paper, and Mr. Mitchell is to be commended for the practical way in which he handled the subject. The next number on the program is by a veteran in apple growing, Mr. Kenney, and I believe we shall be interested in what he has to say on top-working.

Mr. Seth Kenney, of Waterville, read a paper on "Top-working to Secure a Long-Keeping Apple." (See index.)

Discussion.

The Chairman: We have had a very interesting discussion of the papers this afternoon. This concludes our program with the exception of Prof. Robertson's paper. The subject of blight is one that we are all interested in, because we have all suffered from blight more or less. I don't know whether Prof. Robertson can tell us anything new about it or give us a remedy for its prevention, but I think we shall get some interesting facts about it anyway.

Prof. Robertson, of St. Anthony Park, then read a paper under the title "Apple Blight in Review." (See index.)

Discussion.

The Chairman: I think we have all learned something about blight. I don't know whether we have learned enough to keep it away from our trees, but we have heard lots of theories and some experiences, and we can apply those we consider best. This concludes our program, and as we have some questions in the question box we will take those up next and see what there is in them.

(The questions and their answers will be found at various points in the preceding pages.)

The Chairman: As we have a little time to spare now I will give Mr. Elliot an opportunity to make a few remarks that I think will be of interest to us.

Mr. Wyman Elliot proceeded to talk about the exhibit of apples from Minnesota at the meeting of the American Pomological Society, held in Boston in September last. (See index.)

The Chairman: Before final adjournment we have several committee reports to hear, and if Prof. Robertson is ready I will call for the report of the committee on president's address.

Prof. Wm. Robertson, chairman, then submitted the "Report of the Committee on President's Address." (See index.)

On motion of Mr. Taylor the report of the committee was unanimously adopted.

The Chairman: I will ask Mr. Loring to present the report of the obituary committee.

The "Report of the Committee on Obituary" was read by the chairman, Mr. C. M. Loring, as follows:

The obituary committee beg leave to report that during the past year the following members of the Minnesota Horticultural Society have passed from earth:

W. W. Pendergast, of Hutchinson.
E. H. S. Dartt, of Owatonna.
Jas. T. Grimes, of Minneapolis.
J. H. White, of Robbinsdale.

and recommend the adoption of the following resolutions:

Resolved, That this society extend to the relatives and friends of the deceased sincere sympathy and condolence.

Resolved, That the society forward to the family of each a copy of this report.

C. M. LORING,
R. A. WRIGHT,
DEWAIN COOK,
Committee.

On motion of Mr. Older the report of the committee was unanimously adopted.

The Chairman: There is a special committee, of which Mr. Cashman is chairman, to report on the death of Mrs. Wedge.

Mr. Thomas Cashman, as chairman, then presented "resolutions of sympathy and condolence on the death of Mrs. Clarence Wedge," as follows:

Whereas, It is with the deepest regret that this association has learned of the affliction which has come to our honored president, Mr. Clarence Wedge, in the death of his wife,

Therefore, be it resolved, that we tender to him our condolence and sympathy in this his hour of sorrow.

Resolved, That the secretary of this association forward to Mr. Wedge a copy of these resolutions.

THOS. E. CASHMAN,
WYMAN ELLIOT,
CHAS. M. LORING,
Committee.

On motion of Prof. Wm. Robertson the resolutions were unanimously adopted by a rising vote.

The Chairman: The last committee to report is that on final resolutions, and I presume Mr. Brackett is ready.

The report of the committee on final resolutions was submitted by Mr. A. Brackett.

Resolved, That we, the members of the Minnesota State Horticultural Society, do sincerely thank the members of the Unitarian Church for kindly furnishing us with the most convenient and pleasant building that this society has ever enjoyed.

Resolved, That we are under obligations to Professor Crosby Hopps for the very fine music that he favored us with.

Resolved, That we, the exhibitors of fruit, thank Mr. C. M. Loring for his generosity in giving $25.00 in cash as premium on fruit.

Resolved, That the nurserymen and others deserve great credit for the unusually fine display of fruit and also for the many valuable papers they furnished us with, many of them being the hard learned lessons of a lifetime.

Resolved, That Professor Green deserves great credit for the kind, pleasant and efficient way in which he has conducted these meetings in the absence of our president, Mr. Clarence Wedge.

Resolved, That we thank the outside people for the interest they have taken in these meetings in having furnished us with the best attendance we have ever had.

Resolved, That we who attended the banquet will always remember with pleasure the fine repast that was so kindly furnished free of charge by Mr. E. A. Webb; and also the fine entertainment furnished by the good people who furnished the program, and finally

Resolved, That we must not forget to say that we all hope this society may flourish and that we may always have as pleasant a meeting as this has been, and if it should continue for the next hundred years we hope that Mr. Philips, of Wisconsin, will always be here and that his supply of stories may never give out.

On motion of Mr. A. J. Philips the report of the committee was unanimously adopted.

TWO-MINUTE TALKS.

The Chairman: We come now to the closing feature of our meeting, one that we have observed for a number of years and which adds greatly to the feeling of friendship and good fellowship among those who gather here, and that is the two-minute speeches by not only the members, but also the friends from sister states whom we are fortunate enough to have with us. I will first call upon Mr. Bentz, the president of the South Dakota Horticultural Society.

Mr. P. J. Bentz (S. D.): I do not wish to occupy much time, because there are many others whom we wish to hear. I am very glad to again have been able to be with you. I have profited very much by my visit here, and in this connection I wish to extend to the members and friends of the society a cordial invitation to attend the meeting of our society to be held on the third Tuesday in January at Madison, and I am very sorry that the relationship that has so far existed between the societies of South Dakota and Minnesota will have to be terminated in all probability, as we are going to publish our own report. If an arrangement can be made by which the combination might be kept intact it would please us very much. I am sure I have profited very much, indeed, from the information and experience we have gained from this society, and we shall always hold your efforts in our behalf in grateful remembrance.

Chairman S. B. Green: We have enjoyed the society of South Dakota as an adopted child, and while we regret to lose it, we are glad at the same time that it has arrived at such an age that it is able to take care of itself. We are glad to know that North Dakota is represented at this meeting, and we hope to be able in the near future to adopt their organization as a child of this society. We would like to hear a word from Prof. Waldron.

Prof. C. B. Waldron (N. D.): The North Dakota society is not formed yet, but on the 19th and 20th of January we hope to perfect an organization. The enthusiasm of Minnesota has crossed over the border to the extent that the people of North Dakota are just full of this enthusiasm, and sentiment is so strongly shaping itself in this direction that a society will be organized on the 19th and 20th of January, at which time we extend to you all a hearty invitation to be present, for we know that without your valuable work and your assistance we should not have felt encouraged to take the step we contemplate taking in the near future.

The Chairman: We are very glad, indeed, to know that this gospel of horticulture is spreading and that this society has been the means of promoting it, and I am sure we are all hoping for the success of the North Dakota society which is to be organized. We have another visitor here from a sister state whose pleasant voice and wise counsel we have been privileged to hear during this meeting, and I will call upon Mr. A. D. Appletree Barnes, of Waupaca, Wis., for a few words.

Mr. A. D. Barnes (Wis.): Mr. President and Friends: I want to assure you that it has done me a wonderful lot of good to

affiliate with the congenial members on this side of the Mississippi, and as the delegate from Wisconsin and in behalf of the members of our own society present at this meeting, I want to assure you also that we have been cordially greeted and royally entertained at this meeting and at your banquet, and we had the best of everything, both in a substantial way and in the sentiment of this society during this meeting. I enjoy with you your progress in horticulture. We rejoice with you in your achievements. I think the laurels you have won are of ten times more value and greatly more appreciated than those that are more easily won than you have won yours. I want to thank you for all the good things we have been made the recipients of at your hands. I want to extend an invitation to you all to visit us in our homes in the various parts of the state, and also to visit us in our meeting at Madison in the second week in February. Every single horticultural latch string in the state of Wisconsin hangs on the outside.

The Chairman: We are very glad to hear these words of appreciation from our Wisconsin friend. We would certainly keenly feel the loss if we were to lose the presence of our genial and valued friends from across the river. We have another delegate present from a sister state, who is not here as an entire stranger, having been with us some years ago, and I take pleasure in calling upon Mr. Collman, of Iowa.

Mr. A. F. Collman (Iowa): Mr. Chairman, Ladies and Gentlemen, I always appreciate a good social time, and I always enjoy myself where there is anything enjoyable, and this is certainly a place to enjoy one's self. When I was here before, a number of years ago, I had the honor to be escorted by my friend, Mr. Elliot, through your university and through Prof. Green's classroom, and I enjoyed that very much. I went home and told my people there was a great future before Minnesota, for the reason that they had such good schools where they fitted young men and women for life. My prediction came true, because now I see some of those young men who were in school at that time taking a prominent part in the administration and deliberations of this society, and I am more than pleased with the progress and improvement you have made and are still making. Now, my friends, let me ask all of you to stand by your schools and by your professor of horticulture. He is doing a great work that you ought to appreciate, and his reputation as a foremost horticulturist is not confined to your state, but it is well known and appreciated in our section of country. You want to keep him and keep him in the harness and hold up his hands, as well as those of your secretary and other officers. I wish to thank you for the kind treatment you have accorded me, and I shall carry the very best reports home to my people in Iowa. I hope we shall have the pleasure of meeting many of you next week at our annual gathering, and we shall try to use you as well as you have used me. (Applause.)

The Chairman: Iowa is a good place to go to; they always use their delegates well, and I know whoever goes there will receive a cordial reception. We have a gentleman here from a state which is not often represented in our meetings, but the visitors from which

we are always glad to welcome. I take great pleasure in asking Mr. Harrison, of York, Nebraska, to speak to us for two minutes.

Rev. C. S. Harrison (Neb.): Mr. Chairman and Friends: I think it takes a cold climate to develop warm hearts. I have been very cordially received here and enjoyed myself very much. I am catching your spirit, and I am getting full of enthusiasm. The way you defy old Boreas, I want to tell you right here and now (and I am no prophet of the future), that you will yet be raising peaches in Minnesota. We have data from which we are going to work. The Brunings have been selecting hardy peaches for forty years, and they have some of them so perfect that they will stand almost anything in the way of climate. They have crossed the Champion with the Alberta and have grown seedling peaches in which you can see scarcely any variation from the original. After that terrible year that wiped peaches and almost everything else out of existence Mr. Bruning had a good crop of them. Those trees went through a temperature of 40 below and then bore. Then there is Dr. Bailey who is developing another family. The last of August we had a regular New England sleet storm. We found the trees and everything remained solid for nearly two days, and the frost did not come off the windows until the next day, and yet it did not affect the peaches. If you can raise peaches when the mercury goes 14 below zero you ought to be able to raise a good crop where it goes to 25 below. You are surely going to bring the peach belt up this way. Do not depend upon budded seedlings, but those seedlings of a true variety, plant those and you can hope and expect to get good results. You do not need to lay them down and cover them up. I do not believe it will be twenty-five years before you will be growing a splendid crop of excellent peaches here in Minnesota. There is another matter I want to speak of, and that is home adornment. You are going to have some of the most beautiful places on the face of the earth. You can raise evergreen to place upon your farms, you have the right spirit and you will adorn your places in a most beautiful manner. When I come up again—I do not know when I can come up again, I am 71 now—but when I come again, in ten or fifteen years from now, I know I shall find things in magnificent shape. (Applause.)

The Chairman: We are gratified to hear such pleasant predictions from Mr. Harrison, and we are willing to believe that he will prove a good prophet. Mr. Harrison is a man who looks on the bright side of things and works for the best interests of everybody. He is a power in his own state, and we are very glad to have had the benefit of his enthusiasm at our meeting. We have a number more of visiting friends here from whom we would like to hear, and I will ask Mr. Mitchell, of Iowa, to say a few words.

Mr. J. B. Mitchell (Iowa): It is with the greatest pleasure that I find myself here. I have certainly enjoyed myself, and I wish to thank you for the cordial reception you have given me. We have been a little proud of our work in Iowa, quite so I may say, but I am afraid, I really believe, we shall have to yield the medal to Minnesota. You are certainly getting ahead of us in horticulture. You are making more progress, and especially in one thing which I con-

sider very essential in the work of any organization. I see many gray heads in this society, and the same is true of our society, the gray head predominates, and the question often comes to me, "What is to come hereafter?" Here in your society you are getting in many young men; I see you are increasing in that direction a great deal faster than we are, and that is something that ought to be commended and that is encouraging. I am glad that I have been privileged to meet with you, and I want to extend to you a cordial invitation to meet with us in the Northeastern Iowa society which meets at Decorah.

The Chairman: We are glad to hear these words of commendation from Mr. Mitchell, and I am sure we have enjoyed his presence here as much as he has enjoyed being here. We have another gentleman here from Iowa, one who is no stranger to you, whom we almost regard as belonging to us, and whom we are always glad to greet. I refer to Mr. Patten. We want to hear a few words from you, Mr. Patten.

Mr. C. G. Patten (Iowa): I believe there are few living who can appreciate as I can the rapid growth of this association and of the horticulture of your state. I well remember when the apples brought to your exhibitions would not cover more than three times the space of the secretary's table, and now go into the room below and see what you have accomplished. I do not wonder that you have a wonderful inspiration in the culture of fruits and in the matter of home adornment. It took no ken of prophet to predict that here in the Twin Cities, with your splendid opportunities, you were to be the prominent horticultural society of the whole western continent. Massachusetts occupies that position in the eastern states, and I declare to you from what I see before me and what I have seen in the years during which I have been coming to this state, it seems to me there is nothing in the way of your attaining the eminent position of being the first society of this whole western region. I thank you for your kindness, and I hope as many of you as can will come to the meeting of the Iowa society. We are glad to coöperate with you, and we need your coöperation.

The Chairman: Mr. Patten rarely misses one of our meetings, and we are always pleased to have him with us, and hope he may be able to attend many meetings to come. I am going to call on another gentleman whom we hardly count as a visitor, because he never misses one of our meetings, and we regard him as belonging to us about as much as he does to Wisconsin, Mr. Philips.

Mr. A. J. Philips (Wis.): The first meeting of this society I ever attended was held at Winona, and I shall continue to come just as long as I am able to do so. I hope you will not take that resolution that was passed seriously, in which the hope was expressed that I would attend for a hundred years to come. I feel about that a good deal like the old minister felt when his church proposed to raise his salary from $400 to $600. He said, "Brethren, don't do it. It has taken all my strength and energy to collect $400, and if you add $200 more I feel that the task of collecting it will be too great for me. Don't do it, brethren." (Laughter.) It would be more than I could do. One thing has pleased me very much, and

that is the tribute this society has paid to Mr. Patten. I have heard mean things said about him, just as there are mean things said about me, but I am awful glad he came to this meeting just to hear the many kind things said about his work and about the Patten's Greening. I should think it would renew his age ten years. There is one thing I don't like. Mr. Elliot said you had nearly $500 in the Gideon memorial fund. I wish the people of Minnesota could be enthused to make it $5,000. They don't realize what Mr. Gideon has done for them. I want to see that fund go up to $2,000; I think it ought to go up to that anyway, and I think if you all do what you ought to do we can get it up to that figure. Another thing I don't like—although I don't like to say anything about it—but we have been working for all these years to get out a fruit list for the benefit of the people of Wiscinsin and Minnesota. People have read it, and it is a guide to go by, and then in spite of our fruit list you have an article come out in one of your city agricultural papers saying that there are two better apples than you have on your list, just holding up those two as the best there are and throwing all the rest away. Here we honored the name of Harris last year, and that story is right on the same page where the articles on horticulture appear. After all these years of work by experimenters, such as Harris, Somerville, Dartt and others, the report goes over the state and over the northwest that there are two better apples than anything found in your fruit list. I think that is a shame. You know I always have a good time when I come here and I hope to live to come again. (Applause.)

The Chairman: Of course, we do not expect Mr. Philips to live to be a hundred years old and attend all of our meetings, but we hope to have him with us a great many times more. We have another Wisconsin man with us, a sort of partner of Mr. Philips', whose face we are always glad to see, and I am going to call on Mr. Kellogg.

Mr. Geo. J. Kellogg (Wis.): I came here as a delegate from the horticultural society of Lake Mills, but I did not give them credit when I was called on yesterday morning. We organized three years ago, and ran along several years without creating much interest, but last spring I advertised in the papers telling the children twelve years old and under that if they would come to my garden they should have strawberry plants free. The next day ninety-seven came, and we got up quite an interest in strawberries. I offered a prize of fifty cents for the biggest strawberry grown from those plants. It created quite an enthusiasm for strawberries, and we had a very fine exhibition. I think I showed fifty varieties to the children. My Senator Dunlap had some very fine fruit, and I promised the children that the next season I would give them six plants each of the Dunlap. One hundred and fifty-two have asked for the plants, and out of that number we shall get a lot of horticulturists. I have gone a little outside of the common nursery business. I have gone to grafting trees on the highway. I told the children the apples would be for them. Two little girls come along one day while I was grafting and wanted to know what I was doing. I told them, and they were very much interested. In a month they met me again

and they told me there were no apples on those trees yet. I thought it would be too bad to disappoint them, so this fall I went along and stuck some apples on the limbs and the little girls found them. I have a daughter who has been living here eighteen years, and that is one reason why I am here so often. I have enjoyed this meeting wonderfully well. As I said before, I wish more of the people of this city could have seen this wonderful display of apples you have here. There are ten thousand people in this city who ought to have seen it.

The Chairman: I believe we appreciate Mr. Kellogg's presence just as much as he enjoys our meetings. We hope to see him here for many years. I am now going to call on Mr. Ditus Day, the oldest member of the Minnesota Horticultural Society.

Mr. Ditus Day: Mr. President, Ladies and Gentlemen: I am glad to meet with you. I was one of the first members of this society, and I wish to say to you today that I have always looked forward to these meetings and enjoyed them, and I enjoy being with you today. I have not taken an active part or had much to say in the meetings of the society for the past few years, but years ago I had considerable to say; and of late years I have found that others have taken my place who can talk better and serve you better than I can. When I wish to speak on a subject sometimes the words fail to come to my mind which I wish to use to express my ideas. Therefore I have not endeavored to take any part in the discussions, but nevertheless I have enjoyed myself tremendously. I recall to mind when we used to meet in the early days of this society there were only a few of us, but we were full of hope and enthusiasm. There is only one person here who was present when the society was organized, and that is Mr. Wyman Elliot, and another one, A. W. Sias, is living in Florida. As I said before, only a few of us met, but our hearts were in the work. Some people thought we were foolish to try to raise fruit, but notwithstanding discouragements we persevered. My brother-in-law, Capt. Aldrich, used to say to me, "Ditus, why do you spend so much time going to those horticultural meetings? I can sow an acre of wheat and with the proceeds buy more apples than you can raise in twenty years." There were many others who practically told me the same thing, and I recollect that thirty years ago there was a general impression that we could not raise fruit in Minnesota, but we have succeeded wonderfully, even beyond our own hopes and expectations. I have met a number of my old associates and have enjoyed myself very much, and before I sit down I wish to thank you, gentlemen, for the privilege of saying these few words to you. (Applause.)

The Chairman: We are very much pleased to hear these words from Mr. Day. It gives us fresh courage and inspiration when we compare our present conditions with those of thirty and forty years ago, when we still have some of the pioneers in the work with us to urge us on. I am now going to ask Mr. Frank Yahnke to say a few words. He is always ready to say the right thing.

Mr. Frank Yahnke: Mr. President, Ladies and Gentlemen: The highest honor that was ever bestowed on me, the biggest bouquet ever thrown at me, was at the time our late president, Prof. Pender-

gast, said to me, "You are always practical in your speech and your papers." I went down to the exhibition room and got two apples, because our friend Herbst said Mr. Philips was going to take them along home with him. I went down to get them first. Mr. Herbst says Mr. Philips takes the best he can get at our exhibit and takes them to Wisconsin, where he exhibits them at their meeting and takes a premium. We have a lawyer in our town who is a great temperance man. He was present at a temperance meeting recently, and he proved that he did not have a drink in twenty years. He said he had had liquor in his cellar for twenty years, and that was proof that he never drank. I have these apples here which I am going to give to Mr. Philips, and they are my witnesses that he did not take them. If he gets into trouble on this account at the Wisconsin meeting he will have hundreds of witnesses to prove his innocence. Mr. Kellogg here swears to everything Mr. Philips says. We have succeeded wonderfully in our society, and I hope the work will not stop here because we have made a success of it. We have got to continue working with all the energy and means at our command. We have got to work for this society until every man, woman and child in the state of Minnesota is a member. Every school ground in this state must be made ornamental with trees and shrubs so that it will be a thing of beauty for the children who go there. Our streets and roads in the country must be made to look as well as the streets of Minneapolis, and a great deal better than some of them. (Applause.) And more than that, we have got to have fruit on every farm; we have to have it in abundance, so that some of these city people may have some of it, and that not only while the fruit is in season but all the year round. (Applause.)

The Chairman: I wish everybody might be as enthusiastic as Mr. Yahnke; there would be some wonderful things accomplished. This occasion would not be complete without a word from Mr. Loring.

Mr. C. M. Loring: I must say I enjoyed this meeting more than any we ever had. In a very short time, in a few years, we are going to have a jubilee; it will be fifty years since this society was organized, and I want these two gentlemen that come here every year and enliven our meetings to keep just as far apart as possible until that time, so that they may come here in good order, the one from Wisconsin and the other from the southern part of this state. I think the chairman is entitled to a great deal of credit for the harmony he has maintained between these two friends. (Laughter.) We congratulate ourselves on having gone down to Boston and taken the Wilder medal, but good gracious! don't you know we always get what we go after? Down at New Orleans we took the premium for sugar, apples, grapes, butter, wheat and flour. Of course, we can take the premium if we go after it. We are going down to St. Louis next summer and sweep the whole board. So, as Mr. Elliot has said, get ready for it, let us go down there and clean them out. It has been a great pleasure to me to meet my old friends here. It has been one of the grandest meetings I have known in this city, one of the most interesting, and if people could only realize what has been done by this society and could see the fruits of its

labors, it seems to me we would not have a hall large enough in the city to hold the members of this organization. Our friend Yahnke is right when he says we are proud we have fifteen hundred members, but we ought to have three, four or five times as many ,and with a little effort we shall get them. (Applause.)

The Chairman: That is the right kind of enthusiasm. With a feeling like that on the part of every member we are bound to grow. We have with us a young lady from Wisconsin who is making quite a record with seedling apples, and has taken several premiums here. We would like to hear from Miss Cairns.

Miss Gertrude M. Cairns (Wis.): It is a great surprise to me to be called upon, because I certainly did not expect to say anything, at least no more than to ask a few questions, and I have not asked many because there have been so many good things said there was no time to get them in. I am very glad to be here and to have been able to attend the meeting of this society. I was up here two years ago. I was somewhat afraid of you before I came here the first time. I felt that I would be out of place. However, you made me feel so much at home, and I found so much inspiration in your meeting, that I was anxious to come back again. I could not come last year, but I found I could this year. I have been interested in these meetings for many years. It seems to me if we can make others know how much there is to learn here from those who are interested, that even those who grow fruit in a small way only would become interested, and that the wish expressed by one of your members would come true, that people would come to the meeting because there are so many things that can be carried away and made use of, even by those who are not extensively engaged in horticultural pursuits. As far as my seedling apples are concerned, I brought them up here to show what can be done and what has been done under practically the same conditions that exist in parts of your state, to show you that apples can be raised from seed, and as my seedlings are raised only comparatively a few miles from Mr. Philips' place, it carries out the thought in speaking of that work that good apples may be obtained from seeds, and that some are hardy. At least these seem to be hardy. I think the paper which was published in the last number of the "Horticulturist" gives all that I know in regard to these seedlings, and I will only say that they seem in every way perfectly hardy and good bearers. (Applause.)

Mr. C. M. Loring: I was much struck with what one gentleman said in regard to plums, and I believe that fruit ought to be improved. I want to say here, Mr. President, that in order to stimulate that effort a premium should be offered, even though a small one, and I want to offer a premium next year for the best plum. (Applause.)

The Chairman: We have a few minutes more time, and I will call upon Mr. Wheaton for a few words.

Mr. D. T. Wheaton: It has afforded me a great deal of pleasure, as it always does, to be here. I have always been interested in fruit, especially in apples. I love apples, and before coming to Minnesota lived in a state where apples grew plentifully. But the apples I had to eat when I was a boy do not compare with the apples

in the exhibit room below today. I believe Minnesota will in the very near future raise more apples than the eastern states. I am very hopeful of the outlook with the efforts that are being made in shipments outside of the state.

The Chairman: I see another old and valued member before me, whom I know as an enthusiastic and tireless worker, but from whom we never hear a word. Now I am going to call upon Mr. J. R. Cummins for a little speech.

(Mr. Cummins declined to speak.)

Mr. Wyman Elliot: Since Mr. Cummins declines to speak, I will represent him as his proxy. I want to say that we have not in the state of Minnesota a more thorough experimenter than Mr. Cummins. It always gives me a great inspiration to go to his place and see the work he is doing, not only in seedling apples, but in ornamental plants and small stuff generally. He has demonstrated the possibilities of light sandy soil, and I hope we shall have him continue with us for many years to carry on this work.

The Chairman: We have with us a gentleman from Duluth who, I believe, has never been with us before, but whose presence we have appreciated, and I believe also that he enjoyed himself. We would like to hear from Mr. Pendergast.

Mr. R. H. Pendergast: I am glad to say that I enjoyed this meeting very much. It is the first meeting I have attended since the early days of the society. I was one of the early workers in horticulture in the state. I was brought up in a New England state, and I learned that we had to work for results. I have been doing a little in the line of experimenting. I find conditions for growing fruit in our section of country are very different from what they are here. We find the quality of fruit is better than it is here on account of the climatic influence, and one of the things we are not troubled with is too much heat. I have been watching that blight for a good many years. I was in Illinois nearly forty years ago, and I watched its progress further north, and after I went up to the lake I was anxious to see whether we would be troubled with it there. Excepting the Transcendent, which are the worst, up to three years ago I had never seen a sign of it. I cannot speak in regard to the cause of it, but we have cool summers, and that is a great benefit to small fruits. We can beat the world on small fruits. In regard to blight, as I said before, up to three years ago I had never seen a sign of it. Three years ago we had set out thousands of thrifty trees, and a rainy spell was followed by the hottest kind of weather, and inside of a week you could hardly find a Transcendent tree that was not blighted.

The Chairman: Now we want to hear a word from Mr. Richthrdson.

Mr. S. D. Richardson: I have heartily enjoyed this meeting; it was the best I ever attended, and I hope I shall live to attend many more. I am glad to see the younger people taking up the work. It is the young people who are doing the world's work, and it is being well done, and I think we need have no fear for the future of this society so long as the present prospects of help from the young people hold out.

The Chairman: Mr. Parks never has much to say, although he knows a great deal. We want to hear from him.

Mr. J. S. Parks: I have attended but few meetings of the society, but I have been a member since coming to the state. Those meetings I have attended I have enjoyed so well that I intend to stay around as long as Mr. Philips does. (Laughter.)

The Chairman: Now we want a word from Mr. Taylor before we adjourn.

Mr. W. L. Taylor: Prof. Green poked a little fun at me because I liked the Malinda. My children are very fond of the Malinda apple. In fact, I have to fence off the Malinda apples from the other apples in the bin, or they would eat up all the Malindas first.

Mr. Wyman Elliot: I want to say that I have enjoyed this meeting very much, and we have gathered a great many valuable points of information from our visiting delegates, and in order to express in some way our appreciation of their presence and of their aid and suggestions I will move you that all visiting members and delegates be made honorary annual members for the next year.

The motion was numerously seconded and, being put to a vote, prevailed unanimously.

Mr. Frank Yahnke: I believe there is one thing that has been forgotten although certainly not for lack of appreciation, and I want to move a vote of thanks to Mr. Philips for his kindness in bringing this fine specimen of a grafted apple tree to the meeting and for its presentation as an object lesson to the school of agriculture.

The motion was duly seconded and, being voted on, prevailed unanimously.

On motion of Mr. Elliot the meeting adjourned.

Executive Board

1903.

RECORD OF MEETINGS OF EXECUTIVE BOARD, 1904.

Record of meeting held in secretary's office at 8 p. m., Nov. 30, 1903.

The following members were present: Wyman Elliot, Clarence Wedge, S. B. Green, J. P. Andrews and L. R. Moyer.

The bill of Prof. S. B. Green, expenses of seedling committee, was allowed, $15.27. The secretary's bill for expenditures of the office from June 22, 1903, to date was audited and ordered paid:

A. W. Latham, Secretary.....$546.37

The report of the public examiner finding the secretary's books correct was presented and accepted.

The chairman of the board was instructed to secure the services of some competent person to examine the secretary's book hereafter after each semi-annual settlement.

The following other bills were audited and allowed:

A. B. Lyman, treasurer, premiums paid at annual meeting, 1902, $174.95.

A. B. Lyman, treasurer, premiums at summer meeting, 1903, $136.25.

Wyman Elliot, expenses as delegate to Am. Pomological Society, $56.00.

Mr. Forest Henry was recommended for a life membership (honorary).

Adjourned sine die.

Wyman Elliot, Chairman.

A. W. Latham, Secretary.

Record of meeting held in Armory Hall, State Exp. Station, June 24th, 1904.

Present, Wyman Elliot, Clarence Wedge, Samuel B. Green, J. P. Andrews and A. W. Latham.

Wyman Elliot was elected chairman for the current year; and A. W. Latham was elected secretary at a salary of $1,000 per annum.

The salaries of the president and treasurer were fixed at $25.00 each for this year.

The bill of the secretary for expenditures of his office from Nov. 30, 1903, to June 23, 1904, was audited and allowed at $1,624.67.

Adourned sine die.

Wyman Elliot, Chairman.

A. W. Latham, Secretary.

MEMBERSHIP, 1904.

ANNUAL MEMBERS.

Aaness, N. J.....Clarkfield
Abbott, C. A.....St. Charles
Acklin, H. G.....1024 Miss. st., St. Paul
Ackerman, A. W.....Young America
Ackerson, J. H.....Annandale
Ackerson, A. E.....Elbow Lake
Achatz, Chas.....Harmony
Akin, D. F.....Farmington
Alsaker, C. O.....Beardsley
Alling, S. A.....Homer
Albright, Mrs.....Lake Mills, Wis
Allen, S. E.....Brown's Valley
Aldrich, Chas.....Buffalo
Alsaker, R. A.....Benson
Albers, J. H.....Glencoe
Alton, B. D.....Ceylon
Alvord, W. C.....Sherburne
Alford, E. F.....Hunter's Park, Duluth
Allen, Wm.....Le Roy
Amtsbauer, F. H.....Franklin
Anderson, Louis.....Long Lake
Anticknap H.....Regina, Assa.
Anderson, N. C.....R. 1, Deerwood
Andree, J. H.....Wheaton
Andrews, J. P.....Faribault
Andrews, Gen'l C. C.....833 Goodrich av., St. Paul
Anderson, J. J.....Franklin
Anderson, Nils.....Lake City
Anderson, Louis.....Rochester
Anderson, Albert P.....Dassel
Anderson, A. P.....Tyler
Anderson, Mathias.....Lake Benton
Ansted, Henry.....Lamberton
Anderson, J. C.....Ruthton
Anderson, Michael.....Mayville, N. D.
Anderson, Alfred G.....Tamarack
Anderson, P. E.....Kandiyohl
Anderson, A. D.....Wadena
Anderson, A. G.....Worthington
Anderson, Hans Geo.....Nicollet
Anderson, Ida.....Colfax, Wis.
Anderson, Erik.....Lake Park
Anderson, A. B.....Madelia
Andrews, Mrs. T. J.....Bemidji
Anderson, B. N.....Albert Lea
Anderson, A. G.....Hitterdal
Armstrong, J. A.....Winnebago City
Arneson, M.....Shelby
Archibald, A. H.....Big Lake
Arnston, J. E.....Owego, N. D.
Arnegard, Ole.....Hillsboro, N. D.
Armstrong, D. C.....Albert Lea
Aschenbeck, J. H...731 4th Av. N., Mpls.
Atkins, W. W.....Austin
Austin, E. R.....Montevideo
Austin, L. E.....Glencoe
Aune, Olof.....Underwood
Austin, O. A.....McVille, N. D.
Augustine, C. F.....Sargent
Baird, Andrew B.....Winnipeg, Man.
Bacheller, T. T.....Box 1000, Mpls.
Baldwin, H. J.....Northfield
Barnard, Mrs. M. M.....805 7th st. S. E., Mpls.
Baker, Chas. E.....Harris
Bailiff, R. L.....Bloomington
Bayard, P.....Eden Prairie
Batchelor, J. P.....Sta. F., Mpls.
Bauer, Frank.....Dumont
Bardwell, E. S.....Excelsior
Bang, O. H.....Red Wing
Baohmeir, J. A.....Young America
Barberg, J. A.....R. D. 3, Cokato
Barsness, J. A.....Kenyon
Bargabos, J.....Elk River
Bates, W. K.....Stockton
Bartlett, David.....Cooperstown, N. D.
Batcheller, C. E.....Fingal, N. D.
Babcock, F. A.....Oakes, N. D.
Balken, P. L.....Ottofy, N. D.
Baird, W. O.....New Rockford, N. D.
Bazley, Mr. Thos....Sta. F. R. D. 5, Mpls.
Bailey, J. V.....Newport
Baklund, C. A.....Willmar
Bay, Isaac.....Dassel
Barton, Mrs. Isabella.....Excelsior
Barker, A. W.....Myrtle
Bentson, Manuel.....Colfax, Wis.
Benson, J. H.....R. 2, Robbinsdale
Berry, Frank.....Stillwater
Benjamin, Chas.....Maple Plain
Beckley, J.....Nerstrand
Bennett, Wm.....Lowry
Best, E. C.....1134 Lumber Ex., Mpls.
Beltz, F. A.....Boyd
Best, E. D.....409 Nic., Mpls.
Bergh, M. P.....Madison
Bergman, Gust.....Dawson
Benjamin, J. F.....Hutchinson
Beckman, J. W.....Cokato
Bedford, S. A.....Brandon, Man.
Becker, J. C.....Adrian
Benton, A. H.....Madelia
Benjamin, R. G.....Hutchinson
Bell, James.....Grandin, N. D.
Bennett, E. A.....La Moure, N. D.
Beardsley, W. C....New Rockford, N. D.
Beck, Henry.....Jackson
Berthelsen, C.....Albert Lea
Berger, O. K.....R. D. 1, Crookston
Berg, I. I.....Climax
Beal, John.....Ruthton
Benson, Edwin.....Petersburg
Berglund, Geo. C.....Lake City
Beck, W. B.....Elk River
Berglund, Joseph.....Scandia
Bell, Edward.....Sioux Falls, S. D.
Benson, F. E.....North Branch
Bjornberg, J. C.....Willmar
Bisbee, John.....Madelia
Bill, James.....Madelia
Bishop, E. A..1910 Dayton, Merriam Park
Bindenvold, W. F.....Madelia
Bickerdike, R. N.....Tyler, Tex.
Birkeland, C. C.....Willmar
Billings, C. R.....Detroit
Bingle, H. L.....Sanborn
Bierman, Henry.....Glencoe
Bigelow, F. W.....4323 Dupont S., Mpls.
Bjoin, T. H.....Crookston
Bjorberg, F. F.....Hanska
Blair, C. L.....St. Charles
Blakestad, L.....Lyle
Bly, C. W.....Osakis
Blanch, J. L.....Claremont
Bloom, G. A.....Cambridge
Blank, Albert.....R. D. 2, Sanborn
Bonwell, Arthur.....Blue Earth
Bowers, Merriii.....Crescoe, Iowa
Boyle, M. S.....Adrian
Bost, A. A.....Excelsior
Boelk, Ferdinand.....Lansing
Boemmels, G. A.....Fairfax

Boyle, John.....Norwood
Bodin, Chas.....Mound City
Boutell, E. E.....Kasota
Boo, Oscar .....Dassel
Bowe, Lee.....Northfield
Bohnsack, Chas.....Fargo, N. D.
Bowers, D. M.....Howard Lake
Bohl, P. P.....Albert Lea
Boukind, H. P.....Climax
Boynton, E. W.....Eyota
Bonde, Edwin.....Cottonwood
Bosshard, F. W.....Moorhead
Bryant, Mrs. C. M.....Sauk Center
Briggs, O. P.....Excelsior
Brown, Frank.....New Paynesville
Brackett, A.....Excelsior
Briest, A. H.....Arlington
Brown, J. P.....Eureka
Brown, August.....Winthrop
Brown, J. M.....La Crescent
Brickey, R. S.....Britt, Iowa
Brown, Andrew.....Lerdal
Broman, Aug.....Atwater
Bruce, W. J.....Ivanhoe
Broberg, Peter.....New London
Brunes, Ole.....Smiley
Broberg, A. J.....Dassel
Broberg, C. W.....Dassel
Brush, C. C.....Pipestone
Brackelsburg, Casper.....Madelia
Brevig, C. L.....Starbuck
Brecig, A. L.....Starbuck
Brace, G. W.....Mabel
Bredake, Chris.....Kensal, N. D.
Brestack, S. K.....Hannaford, N. D.
Bresser, W. C.....New Rockford, N. D.
Bruels, Hubert.....St. Clare
Brogard, J. M.....Henning
Brown, J. A.....Windom
Brand, John F.....Lamberton
Brahy, Daniel.....Dunnell
Bratrud, Albert .....Spring Valley
Bretchet, J. J.....Glencoe
Brimhall, W. H.....Hamline
Brown, C. B.....Hinckley
Brown, Miss Emily C...3027 Pleasant Av., ...Minneapolis
Buchanan, D. W.140 James St., Winnipeg
Bull, C. P.....St. Anthony Park
Burke, J. H.....Sleepy Eye
Bussee, H. F.....Sta. A., Minneapolis
Buggs, Prof. Wm. A.....Stockton
Burtman, E. A.....Lester Prairie
Burud, Hoken.....Moose Lake
Buss, O. E.....Edgerton
Burke, E. T.....Valley City, N. D.
Burk, Chas.....McHenry, N. D.
Butler, W. H.....Cooperstown, N. D.
Burtness, H. A.....Spring Grove
Busch, Leonard.....Fulda
Burner, Geo. A.....500 Nicollet, Mnls.
Burton, Miss Hazel.....Deephaven
Bull, M. E.....Currie
Burtness, H. E.....Caledonia
Bugbie, W. G.....New Paynesville
Case, E. E.....Staples
Campion, J. A.....Faribault
Cassady, Geo.....Valley Springs
Cairns, Miss Gertrude M..Ellsworth, Wis
Carroll, R. C.....St. Anthony Park
Calkins, Thos.....Fort Ripley
Caldwell, John.....Virden, Man.
Carmen, C. A.....Buffalo
Cahoon, Wm.....Vesta
Carlton, I. M.....Oriska, N. D.
Carlsen, John.....Cannon Falls
Carlier, August.....Dodge Center
Carr, R.....Leal, N. D.
Caldwell, W. A.....Monango, N. D.
Cannon, E. A.....Detroit
Carr, W. A.....Excelsior
Carlson, C. H.....Fertile
Carpenter, G. L.....Vermillion, S. D.
Caswell, C. M.....Jordan
Carr, Geo. A.....Stewartville
Campbell, M. F.....Tracy
Carlson, Andrew.....Harris
Campion, Neil V.....Faribault
Chapman, R. W.....Plainview
Chesney, T. E....40 18th Av. NE., Mpls.
Christensen, Peter.....Hutchinson
Christianson, B. P.....Hutchinson
Chaffee, G. A.....Merriam Park
Cheney, W. H.....Olivia
Chamberlain, Mrs. Louise, R. D. 3, Sta. F, ...Minneapolis
Chinberg, C. A.....Hankinson, N. D.
Chastek, J. M.....Hopkins
Chamberlain, Geo. P.....Northfield
Church, L.....Madelia
Christianson, Claude.....Madelia
Christie, R. J.....Canby
Christiansen, P. A.....Hinckley
Chowan, W. S.....Minnetonka
Christensen, N. N.....Dodge Center
Chambord, F. G.....Hanska
Chlopek, Emil.....Fertile
Cheney, John.....Beaver Falls
Chrisman, Chas. E.....Ortonville
Churchward, W. E.....Dodge Center
Cisney, E. R.....Madelia
Clemons, L. A.....Storm Lake, Iowa
Clausen, H. A.....Sleepy Eye
Clausen, P.....Albert Lea
Cleveland, Henry.....211 E. Superior St., ...Duluth
Clemens, E. J.....Prescott, Wis.
Clark, Chas. B..1513 Bryant, Minneapolis
Clement, Simon.....Albert Lea
Clark, Wm.....Rockford
Conrad, John.....Ortonville
Conat, W. N.....R. 3, Cambridge
Comstock, Albert H.....Duluth
Cook, F. L.....Spearfish, S. D.
Cook, Dewain.....Jeffers
Cowles, Fred.....West Concord
Cook, Mrs. Louisa.....Hutchinson
Cooley, E. G.....Morristown
Collins, Wm. S.....Wadena
Colgan, W. J.....Rosemount
Coleman, W. E.....Atwater
Cooling, Geo.....Madelia
Cooley, Dr. C. O.....Madelia
Coles, D. H.....Lakeville
Corrigan, W. J.....Buffalo Lake
Cole, W. W.....Madelia
Colebank, E.....Madelia
Cole, J. H.....Tracy
Cox, A. A.....Kelso, N. D.
Cork, Geo. R.....Gardner, N. D.
Corbett, D. H.....Gardner, N. D.
Colby, N. A.....
Cohen, David.....815 17th Av. N., Mpls.
Coleman, A. B.....Long Lake
Cohrs, Edward.....Dovray
Cowles, E. D.....Vermillion, S. D.
Cox, E. G.....Detroit
Conser, C. C.....Robbinsdale
Cotton, C. B.....Watertown, S. D.
Crosby, F. M.....Hastings
Crockett, E. D....2611 Stevens Av., Mpls.
Cross, Mrs. E.....Sauk Rapids
Crane, H. L.....Excelsior
Crone, Ferdinand.....New Ulm
Creaser, M. W.....Excelsior
Cross, L. E.....Fort Ripley
Crosby, S. P.....Braham
Curtis, O. H.....Osakis
Cuzner, E. A.....37 27th Av. SE., Mpls.
Cuzner, Harold.....St. Anthony Park
Cushman, W. E.....Montevideo
Culberg, C. A.....Hawick
Cutting, F. E.....Byron
Cummings, J. K.....Detroit
Culp, Chas. W.....Gilmore, Mo.
Cutler, M.....Hillyard, Wash.
Danielson, Geo. A.....Randall
Day, Stephen H.....Northfield

Dalseng, John P.....Starbuck
Dahl, John H.....Chandler
Davies, Mrs. Calista M., Y. M. C. A., Mpls.
Davis, J. S.....Glencoe
Davis, Evan J.....Garvin
Dassett, Martin.....Madelia
Davis, O. H.....Madelia
Dahlen, O. E.....Albert Lea
Davis, W. S.....Elk River
Darling, C. W.....Fargo, N. D.
Davidson, Robert.....May, Wis.
Dahl, T. A.....Mackintosh
Davison, A. H.....Des Moines, Ia.,
Daily, M. J.....Moorhead
Dea, John.....1410 W. Lake, Mpls.
Deline, W. J.....Cannon Falls
DeLandricie, O. J.....Fargo, N. D.
DeWitt, Marion.....Hammond
Decker, J. S.....Austin
DeGraff, Hiram.....Bellingham
Delamater, D. P.....Edina
Dean, W. H.....Morristown
Dey, Wm.....Sleepy Eye
Depuydt, D.....Mankato
Dehrer, Henry.....Mendota
Diethelman, Michael.....Victoria
Dike, M. H.....White Bear
Dillman, S. T.....Long Lake
Dietz, John F.....Odessa
Dike, C. C.....White Bear Lake
Dillingham, G. E.....Hesper, Iowa
Dillberg, S. A.....Russell
Diehl, Cary.....Ruthton
Dicke, A. H.....Red Wing
Dixon, J. K.....North St. Paul
Doffing, Chas.....Hastings
Dolan, F. M.....693 Carroll St., St. Paul
Dodds, J. E.....Wheaton
Domrese, E. R.....Portal, N. D.
Domrese, F. G.....Magnolia
Dohrmann, H. F.....Sleepy Eye
Dorsey, Dr. J. H.....Glencoe
Driggers, Allen.....Madelia
Drum, S. H.....Waseca
Drew, Prof. James M.....St. Anthony
Dufault, A. D.....Red Lake Falls
Dunton, A. M.....Bagley
Duncan, Henry.....Marietta
Durand, A.....Waterville
Dwyer, W. J.....Medina, N. D.
Dybvig, Nels.....Colton, S. D.
Dynes, Walter.....Owatonna
Dynes, John.....Gardner, N. D.
Eastman, G. W.....Crookston
Eaker, E. C.....Albert Lea
Eddy, P. P.....Willmar
Eddy, W. H.....Howard Lake
Edmond, James.....Claremont
Edwards, A. J.....Fort Atkinson, Wis.
Eddy, P. E.....Howard Lake
Effertz, Peter.....Norwood
Egnell, A.....Howard Lake
Eichorn, A. A, Rm. 9, 4½ Wash. S., Mpls.
Eikeland, Prof. P. J.....Northfield
Eisfeldt, Mrs. C.....Cedar
Eichorn, C.....Brownsdale
Ellingson, S.....Sta. F., R. 5, Mpls
Ellison, F. H.....1074 13th Av. SE., Mpls.
Elmore, P. N.....Tacoma, Wash.
Ellison, Mrs. Clarinda.....Pine City
Enbom, Carl.....Excelsior
Engen, C. H.....Norway Lake
Engel, A.....Morgan
Enersen, Albert H.....Lamberton
Engbretson, A. J.....Elk River
Engelhorn, Chas.....McHenry, N. D.
Endsley, P. M.....Guaranty Bldg., Mpls.
Engelson, F. J.....Danvers
Engelrup, Wm.....Morgan
Engman, Nels.....Mayer
Erickson, J. P.....Madelia
Erdahl, Absalon.....R. D. 2, Blue Earth
Erickson, Oscar.....care State School, ...Owatonna
Erickson, John W.....Aitkin
Ernst, N. C.....Dodge Center
Erickson, John W.....Aitkin
Empenger, F. J.....Maple Plain
Emigh, Elgin.....Taopi
Erstad, A. C.....Zumbrota
Ericson, G. R.....Goodhue
Erickson, A. F.....Braham
Ericson, E. M.....Hector
Erickson, O. A.....Kingston
Estenson, O. O.....Climax
Essig, August .....Sanborn
Essig, Christ.....Sanborn
Evans, D. H.....Tracy
Everson, E. W.....Dazey, N. D.
Evans, W. J.....Montevideo
Eves, Mrs. Harriet K.....Olalla, Oregon
Farrar, Geo.....Elgin
Falkenhagen, P. J.....Montevideo
Faix, Julius A.....Benson
Faltysek, Vincent F.....Buena Vista
Farmer, H. J.....Aairlie
Farrel, Chas.....Fargo, N. D.
Fallis, M. H.....Box 894, Riverside, Cal.
Farrar, F. F.....White Bear
Farmer, E. A.....R. 2, Minneapolis
Ferodowill, F. X.....Wayzata
Felland, L. T.....Sioux Falls, S. D.
Featherstone, S. T.....Red Wing
Feska, F. A.....Lake Benton
Featherstone, C. H.....Red Wing
Felland, Prof. O. G.....Northfield
Ferson, C. E.....Kimball
Felkey, D., Jr.....Armstrong, Ia.
Fink, Christ.....Victoria
Fitzer, Chas.....1327 Fremont N., Mpls.
Fitzpatrick, Michael.....Madelia
Fidder, August.....Madelia
Fisher, Wm.....Sandstone
Fjerstad, E. M.....Forman, N. D.
Flint, Henry W.....Gladstone
Flascher, John.....Withrow
Flagstad, J.....Sacred Heart
Fleming, E. D.....Fargo, N. D.
Fletcher, P.....Mattson, N. D
Flaten, Dr. Nils.....Northfield
Flikkie, J. J.....Shelley
Flikka, Olaus.....Shelley
Flatin, G. F.....Spring Grove
Foss, J. H.....Long Prairie
Fossum, Chas.....Dassel
Fossum, Ole J.....Hayfield
Fortin, Geo. E.....813 N. Y. Life, Mpls.
Folsom, J. B.....Fargo, N. D.
Folden, P.....Rollay
Fortier, Remi.....Gentilly
Forgrimson, John.....Hanska
Fornander, Alfred.....Moose
Follett, Dennis.....Hastings
Fowler, L. M.....Waterville
Fleming, Albert.....Vernon Center
Flodquist, C. O.....R. 1, North Branch
Frick, A. R.....Wayzata
Fritze, Leonard.....Claremont
Freeman, Jonathan.....Austin
Frederickson, Marcus.....Hanska
Franze, P. J.....Battle Lake
Fryer, W. E.....Mantorville
Frye, P. H.....Willmar
Frenn, P. J.....R. D. 1, Red Wing
Frederickson, S. C.....Cobden
French, N. S.....Berlin, N. D.
Froat, A. J.....Windom
Fuller, Thomas.....Hamilton, N. D.
Gaulke, F. F.....Brownton
Gary, I. E.....Cohasset
Ganser, Wm.....Carver
Gardner, C. W.....2840 Park Av., Mpls.
Gastfield, A. F..2112 W. 2nd St., Duluth
Gardner, Oscar.....Wyoming
Gaulke, M. C.....Thompson
Garlick, L. W.....Huntley
Gahlen, Fr.....Glencoe
Getchell, W. H.....Excelsior

Gerdsen, Henry.....Victoria
Gerth, W. B.....Lamberton
Gergen, N. B.....Hastings
Gearty, T. G.....Robbinsdale
Ginder, Henry.....Hinckley
Gilbertson, O. O.....Ansgar
Gill, Edward.....St. Paul
Giewert, J. A.....Madelia
Gilbert, L. W.....Glencoe
Gilbert, J. V.....Proctor
Gibbs, Mrs. F. H.....St. Anthony Park
Gillette, Mrs. A. J..Dellwood, White Bear
Glyer, Alfred.....Forest Lake
Glaeser, Jacob.....Owatonna
Glain, K. H.....Hanley Falls
Glise, Geo. W.....Mabel
Gleason, Fred.....St. James
Glidding, S. H.....Elk River
Glidding, Sam.....Elk River
Gmiener, Rev. John.....Springfield
Goodman, D. E.....Faribault
Goltz, E. J.....Janesville
Goodell, C. A.....Mankato
Gove, E. J.....Bingham Lake
Goetzke, Aug.....Mendota
Goergen, Peter.....care Burrhill Farm
.....Long Lake
Gove, Ed.....Madelia
Goetsch, Joseph.....Waltham
Gray, W. I.....Excelsior
Grannis, G. F.....Vernon Center
Grant, John.....Stacy
Griswold, A. A.....Wayzata
Gregg, O. C.....Lynd
Gregor, John.....Hutchinson
Gregory, Wm. T.....Hewitt
Gray, A. N.....Bay Lake
Green, Prof. S. B.....St. Anthony Park
Grobele, Arne.....Watson
Geer, C. A.....New London
Grover, C. A.....Glyndon
Greeley, M. F.....Gary, S. D.
Gregory, Henry.....Jordan
Grant, E.....Moorhead
Grayling, J. N.....Spring Valley
Grover, O. J.....Glyndon
Green, Horace.....219 8th Av. S., Mpls.
Gustave, Frank.....Buffalo
Gustafson, Chas. A.....Spicer
Gunn, Alexander.....Janesville
Gudvangen, M. S.....Barton, N. D.
Gurney, C. W.....Yankton, S. D.
Gullickson, C. J.....Beltrami
Guy, E. E.....Cedar
Gullette, Albert.....Robbinsdale
Harris, Wm.....Hewitt
Haugle, Sam.....Colfax. Wis.
Hatledal, Cle O.....Benson
Haggard, Henry.....Excelsior
Hazelton, D. C.....Cutler
Hayes, Prof. W. M.....St. Anthony Park
Hawkins, A. O.....Excelsior
Hamlin, Alonzo.....Spring Valley
Hazzard, Geo. H.....St. Paul
Hart, Geo. W.....Cable, N. D.
Hart, W. W.....Delavan
Hart, E. W.....Madison, S. D.
Hawkins, John.....Box 495, Minneapolis
Hamustrom, C. J.....Sta. A., Mpls.
Hawkinson, P. M.....Harris
Hammergren, A. R.....Harris
Halin, L. E.....
Hanson, L. S.....Ada
Haley, Manning.....Wrightstown
Haseltine, Frank T.....Crookston
Hagen, Ole J.....Hendrum
Hanscom, W. H....812 41st Av. N., Mpls.
Hart, Frank B.....1001 E. 19th St., Mpls.
Hart, E. A.....
Hammer, M. E.....Heiberg
Hanson, Mrs. A. S.3232 Harriet Av., Mpls.
Hayledd, Wm.....Marietta
Harrison, W. E.....Chanhassen
Hamilton, Geo. H.....1065 Ottawa Av.
.....St. Paul

Hall, Joseph.....Wausau, Neb.
Haycroft, J. E.....Madelia
Hage, George.....Madelia
Hanson, Mons.....Stillwater
Halvorson, J. A.....Norway Lake
Haycroft, Emery.....Madelia
Hageman, E. A.....Madelia
Harrang, Peter P.....Underwood
Halloff, Mrs. Ellen.....Cologne
Hawkins, J. C.....Austin
Harold, Wm.....Walnut Grove
Hanson, O. W.....Morgan
Hanchett, F. B.....West Lebanon, N. H.
Hawkinson, Olof .....Maynard
Hawkes, A. S.....Waseca
Hanson, J. G.....Kasson
Harkness, N. L.....Mabel
Hash, Wm.....Mabel
Hamilton, E. P.....Cooperstown, N. D.
Hall, C. W.....New Rockford, N. D.
Halloway, Thos.....Dodge Center
Hall, Geo.....West Concord
Hanson, Jas. F.....Fertile
Hanson, H. F.....Albert Lea
Harris, D. S.....Cherokee, N. C.
Hanson, Louis.....Constance
Hall, J. P.....Willow City, N. D.
Hanson, Harry G.....Fertile
Hanson, Norman .....Fertile
Harris, Geo. A.....Box 137, Mankato
Hanson, Amond .....Fertile
Hanson, C. N.....Rush City
Hanks, David.....Russell
Haapala, Andrew .....Dassel
Hahn, Henry.....Robbinsdale
Harker, John B.....1726 9th Av., Mpls.
Hanson, Christian.....Hammond, Wis.
Hennessey, T. E.....Lake City
Hemstadt, M. A.....Montevideo
Heins, H. H.....Jordan
Heifert, E. A.....Stillwater
Hector, A.....Worthington
Headley, Wm. .....Dunnell
Helmer, S. O.....Buffalo
Hesselgrave, R. V.....Winnebago City
Hester, F. J.....Owatonna
Henke, Miss Ida.....Wood Lake
Hendrickson, M. P.....Montevideo
Heaton, Sr., Frank.....Annandale
Helling, J. A.....Madelia
Hewitt, A. .....Canby
Herrick, A. E.....Little Falls
Heath, Fred .....Fargo, N. D.
Hermundie, L.....Abercrombie, N. D.
Hemmingson, Walter ...Hannaford, N. D.
Heitz, Paul .....Glencoe
Heglund, Chas. .....Constance
Hellinger, Max .....Dovray
Heath, Albert .....Elk River
Heald, W. H.....Letcher, S. D.
Heidwinkel, Geo.....R. D. 4, Mankato
Henton, G. M.....Elk River
Headley, C. W.....Winnebago City
Hermanson, H. .....Hopkins
Hebbel, Henry .....Windom
Heinan, John .....Hastings
Heath, C. C.....Beltrami
Hinkley, C. N.....Osseo
Hibbs, D. R. P.....Albert Lea
Highmark, L. P.....West Duluth
Higbie, W. S.....Eden Prairie
Hill, Dr. S. J.....Fargo, N. D.
Hicks, Carl .....Fargo, N. D.
Hicks, Ole .....Hickson, N. D.
Hicks, A.....Esmond, N. D.
Highby, L. P. H.....Albert Lea
Hilden, A. P.....Watson
Hintermister, Jr., J. Henry.....
.....205 Dispatch Bldg., St. Paul
Hinds, H. W.....Huron, S. D.
Hill, C. L.....Albert Lea
Hill, C. A.....Elk River
Hipple, John .....Russell
Hitchcock, R. E.....Excelsior

Honaas, Axel .....Elk Mound, Wis.
Hoffman, Peter .....Fergus Falls
Hoglund, O.....Center City
Howland, F. B.....Northfield
Holt, John E.....Carver
Holmgren, Alfred.....Kirkhoven
Holcolm, H. S.....Excelsior
Howard, Frank .....Madelia
Holbrook, A. P.....Long Lake
Hodgson, T. C.....Elbow Lake
Horton, W. H.....Alexandria
Holcomb, Moody .....Lester Prairie
Holley, O. F.....Madelia
Hoffarth, Frank .....Long Prairie
Holes, Jas.....Fargo, N. D.
Holmen, Elmer O.....Horace, N. D.
Hoverstad, T. A.....Crookston, Minn.
Hodgmire, J. L....336 Boston Blk., Mpls.
Holmes, D. S.....Lakefield
Hoverstad, Miss Carrie..R. D. 2, Dennison
Hoffman, A.....White Bear
Hough, Jas. M.....Clear Lake, S. D.
Holl, J. P.....Willow City, N. D.
Hoss, Wm. .....Faith
Hodnett, Royal .....Stillwater
Holty, G. .....Bagley
Hoyt, B. T.....Merriam Park
Holmberg, N. J.....Cambridge
Holl, Dr. P. M.....Sta. A, R. 4, Mpls.
Hulburt, C. S.....City Hall, Mpls.
Huff, T. A.....Fergus Falls
Hull, W. L.....Estherville, Iowa
Humes, Dr. J. P.....Winnebago City
Humphrey, B. T.....Madelia
Hutchins, T. C.....Elbow Lake
Huth, F. W.....Alma, Wis.
Hummell, J. A.....St. Anthony Park
Hynson, R. E.....Mankato
Ilett, John .....Redwood Falls
Ingebretson, Wm.....Colfax, Wis.
Innis, Irvine .....Aitkin
Innis, Geo. S.....Hamline
Iversen, Carl .....Lake Benton
Ingersoll, J. F.....Crookston
Imsdahl, J. T.....Big Woods
Ioves, C. C.....Pine City
Jacobson, P. G.....Madison
Jacobsen, Johnny .....Franklin
Jacobsen, Fred .....Tyler
Jacobsen, Jacob .....Tyler
Jacobson, Frank .....Ruthton
Jackman, M. F.....Petersburg
Jackman, A. C.....Petersburg
Jarchow, Geo. .....Stillwater
Jensen, T. P.....Little Falls
Jenson, C. M.....Albert Lea
Jensen, Jens A.....Rose Creek
Jensen, E. P.....Montevideo
Jensen, Chris. .....Tyler
Jensen, Frantz P.....Tyler
Jensen, C. M.....Box 74, Fostoria, Iowa
Jensen, Anton .....McIntosh
Jenson, James R.....Woonsocket, S. D.
Jensen, Hans P.....Erwin, S. D.
Johnson, Frank.....Benson
Jorgerson, I. B.....Hutchinson
Jones, Thos. C.....Russell
Johannessohn, L.....Beltrami
Johnson, Andrew .....Dassel
Johnson, A. P.....Kingston
Johnson, J. A.....Kingston
Johnsen, Jorgen .....Tyler
Johnsen, Hans P.....Tyler
Johnson, John A.....Waseca
Johnson, L. C.....Fargo, N. D.
Johnson, J. M.....Heron Lake
Johnson, G. H.....Lakefield
Jones, John N.....Russell
Johnson, C. W.....Judson
Johnson, O. B.....Ruthton
Johnson, Gust.....Constance
Johnson, Sam .....Constance
Johnson, Fred .....Constance
Johnson, L. M.....Constance
Johnson, A. W.....Constance
Johnson, P. J.....Constance
Johnson, A. E.....Cloquet
Johnson, E. W.....Beltrami
Johnson, J. P.....Excelsior
Johnson, M. B.....Nicollet
Johnson, G. P.....Excelsior
Johnson, Albert .....Corning
Johnson, B. G.....Granite Falls
Johnson, John Ad.....Hector
Johnson, P. G.....Lake City
Johnson, O. N.....Gibbon
Johnson, J. H.....Bellingham
Johnson, J. E.....Benson
Judd, J. B.....Fargo, N. D
Kapphahn, Gustavus.....Alexandria
Kare, N. C.....3856 36th Av. S., Mpls.
Kasper, Frank .....Glencoe
Karlsted, O. P.....Dassel
Kankel, Otto .....Fertile
Kateley, Lucius.....Sherburne
Kasper, Anthony .....Glencoe
Katzner, Rev. John B.....Collegeville
Karcher, Geo. .....Excelsior
Kehn, Mrs. J. C..306 10th Av. S. E., Mpls.
Kelley, S. G.....Long Lake
Kellogg, R. M.....Three Rivers, Mich.
Key, C. L.....St. Peter
Kennedy, Daniel .....Biscay
Kelley, Michael .....Madelia
Kellar, C. B.....Albert Lea
Keeler, H. R. .....
Kennedy, John .....Lake City
Keays, A. W.....Elk River
Kelley, Clark .....Devil's Lake, N. D.
Kerr, O. W.....Fargo, N. D.
Kepner, N. F.....New Rockford, N. D.
Keasling, F. J.....Elk River
Ketcheson, Melville .....Milnor, N. D.
Kelley, W. A.....Hickory
Kelley, Cornelius .....Little Falls
Kingbay, Fred .....Eagle Bend
Kinkade, W. S.....Sioux Falls, S. D.
Kingen, Carl A.....New London
Kimball, F. W.....Austin
Kinghorn, W. A.....Rogers
Kingsley, Mrs. Ida M.....Stewart
Kiehn, Chas.....Dodge Center
Kietzer, G.....Vernon Center
Kingsbury, Mrs. Anna B. .....
.....1996 Mill. Av., St. Paul
Kintzi, R. D.....Butterfield
Klaksvik, Iver S.....Underwood
Klug, N. R.....Caledonia
Klauser, H.....Litchfield
Klesie, Lewis .....New Richland
Klussmann, Ed. C.....Welcome
Klevann, P. P.....Starbuck
Knudson, Kittle .....Hartland
Knutson, J. O.....Swift Falls
Knoke, L. A.....Willow City, N. D.
Knight, J. E.....Page, N. D.
Knuppel, Fred .....Billings
Kosbab, Paul .....Truman
Kording, John .....Hayfield
Kough, Thomas .....Taopi
Korsmo, Soren A.....Franklin
Kovar, Wansel .....Owatonna
Kolbert, John .....Mankato
Koch, H. W..Bennekom, Holland, Europe
Kolars, F. W.....E. Grand Forks
Kolesch, August .....St. Louis Park
Kroll, John.....Lake Benton
Krog, Jens H.....Lake Benton
Kravik, Ole.....Marietta
Kruse, N. S.....Tyler
Kroeker, H. M.....Mt. Lake
Krouchnabel, Geo.....Fertile
Kulberg, B. J.....Hector
Kuhman, G.....Heron Lake
Kuvass, John K.....Perley
Kwetensky, J. J.....Chatfield
Larson, Orin .....Colfax, Wis.
Lane, C. W.....3209 3d Av. S., Mpls.

Lambert, R. R.....Rush City
Larsen, C. M.....Albert Lea
La Mont, Scott.....Jarretts
Larson, Lewis .....Minnetonka Mills
Lake, A. H.....Black River Falls, Wis.
Lamperd, James .....Fairmont
Larson, Albert .....Goodhue
Lambrecht, M.....520 Rice st., St. Paul
Lawson, H. J.....Owatonna
Laughlin, V. P.....Owatonna
Larson, Alfred G.....Winthrop
Laughlin, J. R.....Owatonna
Laughlin, Wm.....Owatonna
Larson, Leonard .....Isanti
Lamb, Chas. .....Downer
Larson, Oliver .....Green Lake
Larsen, Swen .....Madelia
Larson, Corneilus.....New London
Larson, L. O.....Dwight, N. D.
Lamotte, Ed .....Deehr, N. D.
Lawson, L. P.....Geneva
Larsen, Peter .....Albert Lea
Larson, Hans .....Crookston
Latta, Walter .....Crookston
Larson, L.....St. James
Lantz, A. H.....R. D. 3, Mankato
Lawrence, Louis .....New Ulm
Larsen, C. F.....Morgan
Langeson, Nels C.....Hutchinson
Larson, J. R.....Otisville
Larson, John .....Grandy
Lewis, K. W.....Winong, Wis.
Leath, Fred .....Cleveland
Leibbrand, Jacob .....Jordan
Leibold, Frank.107 N. Minn. st., New Ulm
Lietz, L. .....Dover
Leach, A. D.....Excelsior
Lee, Theodore A.....Benson
Leonard, E. A.....Spring Valley
Lester, Erwin .....Jackson
Lenxon, Miss .....Forman, N. D.
Lee, John M.....Aneta, N. D.
Lend, Karl .....Gallatin, N. D.
Leathers, W. O.....Huntley
Lee, Geo. F.....Madelia
Lees, Peter .....629 5th st. S., Mpls.
Ledin, Sr., C. E.....North Branch
Lindberg, B. O.....Beltrami
Lien, T. J.....Delavan
Lightfoot, L.....Cloquet
Lindstrom, Peter.....Harris
Livingstone, R. G.....Spring Valley
Lindberg, And.....Scandia
Lindland, H.....Vienna, S. D.
Liljegren, Karl A.....514 Nic., Mpls.
Lind, Christ.....Colfax, Wis.
Lindert, Andrew J.....
Owatonna, care Clinton Falls Nursery
Lindert, Karlos A.....
Owatonna, care Clinton Falls Nursery
Libby, F. M.....Robbinsdale
Lindley, Clarkson .....620½ Nic., Mpls.
Lietz, G. .....Dover
Lindstrom, Anton.....Westbrook
Lilly, W. W.....Hankinson, N. D.
Lilleskor, John L.....Cannon Falls
Lewis, James .....Lewisville
Lepine, W. E.....Welcome
Lillie, W. H.....Alpena, S. D.
Lien, Martin.....Fargo, N. D.
Liljeholm, Chas.....Plano, N. D.
Lindley, Isaac C.....Amboy
Lofgren & Lundquist.....
.....30-32 S. 5th st., Mpls.
Longfellow, L.....1808 Vine pl., Mpls.
Logering, Aug.....Long Prairie
Lowe, J. W.....Fairmont
Long, A. G.....Excelsior
Long, F. B.....820 Hen., Mpls.
Looker, G. .....Scriven
Lundquist, Walter .....Winthrop
Lund, Alfred .....New Richland
Ludeman, W. F.....Buffalo
Lundblad, Peter .....Wayzata
Lucken, K. J.....Portland, N. D.
Lunde, Nels J.....Winnipeg Junction
Lundholm, Dr. E. M.....
.....358 E. 10th st., St. Paul
Lungird, C. P.....Sleepy Eye
Lund, I.....Hopkins
Lunde, Rev. A. M.....Maple Bay
Lundquist, Rev. Hjalmar.....
.....920 Burr st., St. Paul
Lund, Victor .....Scandia
Lundgren, E.....Isanti
Mareck, Titus .....
.....1215 Marshall st. N. S., Mpls.
Mathison, Martin .....Hector
Mattfield, Henry.....Cologne
Magnusson, Sven.....Harris
Malcolm, H. W.....1922 Hawthorn, Mpls.
Mattson, Chas. A.....Scandia
Mayman, E. W.....Sauk Rapids
Maschger, A. F....859 E. 7th st., St. Paul
Mack, Wm. .....Belview
Mager, Victor....Box 502, Winnipeg, Man.
Mather, J. S.....Madelia
Manning, J. R.....Boog, S. D.
Madsen, Henry.....Madelia
Massee, O. W.....Albert Lea
Martensen, R. J.....Tyler
Martin, E. E.....Claremont
Mayo, H. A.....Walhalla, N. D.
May, C. B.....Fargo, N. D.
Mathews, Sam .....Fargo, N. D.
Matson, Pete.....New Rockford, N. D.
Manley, J. A.....New Rockford, N. D.
Marsh, F. L.....Champlin
Marvin, Jas.....St. James
Marin, W. A.....Crookston
Manderfield, H. J.....Comfrey
Malberg, P. B.....Viking
Manderfeld, Henry.....New Ulm
Malm, Olof .....Little Falls
Mackenzie, Jas. A....612 Girard N., Mpls.
Meyer, O. F.....Fairmont
Mesenburg, Frank .....St. Cloud
Merritt, C. W.....Winona
Melgren, John .....Cologne
Mee, J. .....Gaylord..
Merrill, H. L.....Hutchinson
Melgaard, H. L.....Argyle
Metz, J. W.....Park River, N. D.
Mesker, Dr. G. H.....Olivia
Meyer, Henry .....Blue Earth
Mjelde, A. N.....Beltrami
Meyer, C. H.....Northrup
Mills, R. W.....Greenleaf
Mills, L. D.....Lake Crystal
Mitchell, Mrs. Marie.....
.....4106 Upton av. S., Mpls.
Mills, W. E. L.....Lac qui Parle
Miller, J. K.....Sauk Rapids
Mills, G. R.....St. Charles, Ill.
Mighton, S. R....Box 524, Winnipeg, Man.
Miller, S. O.....Lakeville
Miller, K. O.....Fairmont
Miner, O. E.....Sleepy Eye
Mitchell, D. M.....Owatonna
Mills, J. G.....Hannaford, N. D.
Miller, A. M.....Harmony
Minars, Adolph G.....Pine City
Miller, Peter .....Westbrook
Mills, Mrs. J. S.....Elk River
Mickelson, H. J.....Zimmerman
Miller, D. E.....Albert Lea
Minsaas, E. O.....Wegdahl
Miner, J. E.....Excelsior
Mjonsby, Ivan J.....Christine, N. D.
Morgan, H. L.....Bradley, S. D.
Moen, Wm.....Colfax, Wis.
Mohl, Fred .....Adrian
Moyer, L. R.....Montevideo
Moore, Mrs. Flora B.....
.....327 3d av. S. E., Mpls.
Moeser, Frank .....St. Louis Park
Morton, John .....Havana
Moyer, E. E.....Hudson, Wis.
Moore, O. W.....Spring Valley

Morrison, Joseph .....Drayton, N. D.
Moore, Geo. C.....Detroit
Mosser, Fred .....Madelia
Mortensen, C. P.....Tyler
Moyer, Henry .....Lamberton
Moll, C.....Sleepy Eye
Morgan, C.....Forestville
Moebs, A. J.....Elk River
Moen, O. J.....Goldnett, N. D.
Moen, Albert G.....Mayville, N. D.
Movig, John C.....Ayr, N. D.
Monson, H. T.....Mayville, N. D.
Moulton, Ed. .....Owatonna
Monson, Martin A.....Bricelyn
Mosher, D. N.....Hobson
Monson, E. G.....Climax
Moulton, H. R.....Mountain Lake
Morins, E. T.....Lidgerwood, N. D.
Moe, J. B.....Sandstone
Murray, Rev. D. L.....Blooming Prairie
Muckle, H. A.....
.....375 Cleveland av., Merriam Park
Murray, J. W.....Excelsior
Murray, Mrs. E. M.....Excelsior
Muir, H. S.....Winnebago City
Mullin, P. T.....Hutchinson
McCray, Miss Alice C.....
.....712 Bradford, Mpls.
McGaun, John .....Pine City
McKellip, C. D.....Faribault
McEnroe, Peter .....Donaldson
McCan, Mike.....De Graff
McCarty, Edward .....Madelia
McCarty, Dr. Wm.....Madelia
McConnell, W. W. P....Capitol, St. Paul
McBroom, J. K.....Excelsior
McCurdy, J. B. K.....Madelia
McFarland, Geo.....Valley City, N. D.
McCarty, Chas. .....McIntosh
McKay, A. E.....Groniger
McCumber, A. L.....
.....R. 1, Ellenburg, Wash.
McCauley, Arthur M.....
.....Church's Ferry, N. D.
McAdams, S. H.....Swea City, Ia.
McKean, Samuel .....R. D. 7, Stillwater
McMackin, Geo.....Madelia
McMartin, D. L.....Claremont
McLaughlin, W. W.....Madelia
McVeety, J. A.....Howard Lake
McKisson, G. D.....Fairmont
McLeran, F. B.....Wrenshall
McMartin, F. B.....Claremont
McKissick, Chas.....Mayville, N. D.
McLachlen, Dr. C....New Rockford, N. D.
McMillan, Harvey C.....Albert Lea
McMillan, D. .....Beltrami
McIntire, E. E.....Crookston
McKenzie, Mrs. Anna.....Hutchinson
McVeety, T. W.....Fessenden, N. D.
Naumann, Robt.....710 Nic., Mpls.
Naylor, W. F.....Hewitt
Nash, Chas. C.....Three Rivers, Mich.
Nagle, C. F.....Winnebago City
Nesseth, T. H.....Fertile
Nelson, Charles .....Pine City
Nelson, Mrs. John A.....Lindstrom
Newhall, Robt. T.....
.....2702 Humboldt S., Mpls.
Nelson, Hans .....Fergus Falls
Nelson, Iver .....Cottonwood
Nelson, N. J.....Dawson
Nelson, C. N.....Amo
Nelson, G. A.....Dassel
Nelson, Helge .....Willmar
Nelson, Theo. G.....Hatton, N. D.
Nelson, Jas.....Kensal, N. D.
Ness, John P.....Constance
Nelson, Pete .....Red Wing
Nelson, Carl .....Constance
Nelson, Nels P.....St. James
Nelson, Oscar .....Dorris
Neil, V. A.....3621 1st av. S., Mpls.
Neison, Geo. S.....Foxleigh, N. W. T.
Nessel, G. W.....Rush City
Nelson, Martin.....R. 1, North Branch
Nelson, H. P.....Red Wing
Nelson, Geo. .....Braham
Niles, F. A.....Cedar Rapids, Ia.
Nivere, D.....New Rockford, N. D.
Nichols, A. B.....Winnebago City
Nielsen, Soren .....Albert Lea
Nickson, J.....Henning
Nilson, N. Alick.....Parker's Prairie
Nilssen, Robt.....Morgan
Nielson, J. .....Ortonville
Nicol, J. I...Yellow Grass, Assa., Canada
Noyes, W. H.....Owatonna
Nopson, N. S.....Stewartville
Norby, A.....Madison, S. D.
Nott, F. G.....Howard Lake
Northrup, J. E.....Hen. & 1st, Mpls.
Noble, T. E.....Manchester
Norwood, N. M.....Balaton
Norell, E. E.....Isanti
Noerenberg, Fred..Cascade Springs, S. D.
Nutter, F. H.....710 Sykes Blk., Mpls.
Nystrom, Gust .....Worthington
Nysetor, P. O.....Fargo, N. D.
Nyttenbach, John.....Finlayson
Nyberg, C. J.....Sanustone
Oastler, J. R.....Crookston
Oberg, Chas.....North Branch
Ogilvie, James .....Blue Earth
Ohland, Geo. .....Norwood
Oliver, J. M.....Lakeland
Oleson, M. .....Montevideo
Olslund, O. N.....Beltrami
Older, C. E.....Luverne
Olson, John C.....Irving
Olson, Wm. .....Spicer
Olson, Magnus .....Dwight, N. D.
Olson, Fred.....Sanborn, N. D.
Olson, C. K.....Davenport, N. D.
Oleson, Olbert J.....Rr. 1, Windom
Oleson, Jr., Eric.....Dunnell
Olson, Dan .....Bennettsville
O'Leary, Tim .....Barnesville
Olson, Alfred .....Otisville
Oman, Alex. E.....Grandy
Omland, Erick .....McIntosh
Ongstad, H. H.....Pelican Rapids
Oppegaard, E. O.....Sacred Heart
Opheim, Andrew .....Fertile
Oredalen, Ole .....Kenyon
Orton, Chas. J.....Marietta
Osborn, John .....Dassel
Oslund, N. N.....Bethel
Ostrund, John .....New London
Osgood, Geo. E.....Fargo, N. D.
Ossen, Geo. .....Russell
Otis, F. M.....Brook Park
Otterness, E. L.....Cannon Falls
Otis, Horace .....Yankton, S. D.
Overgaard, P. H.....Albert Lea
Overlees, L. R.....Edgeley, N. D.
Owen, S. M.....Lumber Ex., Mpls.
Payne, S. D.....Kasota
Pabody, E. F.....Zumbra Heights
Parks, J. S.....Amboy
Parks, Wm. .....Amboy
Page, A. W.....Long Lake
Parker, W. L.....Farmington
Patten, J. W.....Long Lake
Palmer, W. H.....Browndale
Patmore, H. L.....Brandon, Man.
Paulson, A. D.....Irving
Parks, W. S.....Thorp, Wis.
Patterson, Dr. R.....Barnesville
Paine, T. M.....Glencoe
Paleson, P. .....Osakis
Paulsrud, Hans .....Fertile
Parson, N. .....Northfield
Page, Leslie .....Pleasant Grove
Palm, L. .....Princeton
Parkhill, R. .....Chatfield
Peterson, Albert.....Colfax, Wis.
Peterson, Andrew .....Valley
Peterson, O. M.....Albert Lea
Pell, Wm. A.....Currie

Perkins, C. E.....Corona, S. D.
Pengilly, James .....Shakopee
Penning, Martin .....Sleepy Eye
Pederson, P. A.....Benson
Pendergast, R. H.....
.....4327Puleston st., Duluth
Peterson, V. C.....Renville
Perry, P. H.....Excelsior
Perkins, T. E.....Red Wing
Pearl, G. S.....Hancock
Peterson, Jno. Alf.....Chisago City
Peterson, Jos.....Lake Crystal
Peterson, C. O.....Afton
Peterson, F. J.....Waconia
Perrons, C. O.....Dundas
Peterson, G. R.....Dumont
Peterson, Nels.....Fisher
Peterson, G.....Fairfax
Peterson, Theo. S.....Boyd
Peterson, Peter....306 20th Av. N., Mpls.
Pettis, E. E.....Madelia
Pettis, C. C.....Madelia
Perry, G. S.....Farmington
Pederson, H. C.....Hopkins
Peterson, P. E.....Dassel
Peterson, Geo. A.....Canby
Pederson, N. P.....Underwood
Peterson, Mrs. Marie.....Lake Benton
Peterson, P. H.....Atwater
Pederson, Martin.....Minnie Lake, N. D.
Penney, J. C.....Florine, N. D.
Pearson, H.....Comstock
Peoples, Hugh.....New Rockford, N. D.
Pederson, O. O.....Harmony
Peterson, Robt.....Amboy
Peterson, Carl F.....Storden
Pederson, Paul.....Constance
Peterson, A. W.....Comfrey
Peterson, John P.....Dunnell
Penney, John.....Centuria, Wis.
Peterson, H. P.....Elbow Lake
Peterson, F. F..Century Bldg., Albert Lea
Pecuman, J. A.....Afton
Peterson, J. O.....1501 Wash. S., Mpls.
Peterson, Peter.....Cambridge
Peterson, John G.....Kensington
Pfaender, Wm.....New Ulm
Pfeiffer, Rev. Chas.....Long Prairie
Pfister, John M.....Marietta
Pfeiffer, Fred.....Morton
Pfeiffer, Rev. N. J.....Eden Valley
Phillips, Walter B.....
.....Grand Portage Reservation
Pickert, C. J.....St. Charles
Pineo, W. B., M. D.....Minneapolis
Pickard, S. R. W.....Niagara, N. D.
Pickard, W. O.....Niagara, N. D.
Pinthen, N. B.....Fargo, N. D.
Piper, R. G.....Leonard, N. D.
Plant, J. T.....Mora
Pleton, Nils J.....Wendell
Platt, Chester.....Cooperstown, N. D.
Plaisted, Neil.....Withrow
Plows, Featherstone.....Finlayson
Poussin, G. W.....Onigum
Pope, Jed.....Caledonia
Pond, E. R.....Sta. F., Minneapolis
Polk, D. F.....St. Anthony Park
Polcow, Herman.....Springfield
Powers, T. S.....Grand Rapids
Porter, A. W.....La Moure, N. D.
Porter, W. R.....Voltaire, N. D.
Pohlman, Wm.....Lakefield
Pray, J. W.....135 E. Grant St., Mpls.
Pracna, Frank J.....117 Main St., Mpls.
Pratt, Frank.....New Paynesville
Probstfield, R. M.....Moorhead
Prosch, Wm.....Evan
Prosin, Amil.....Lakefield
Prescott, G. H.....Albert Lea
Price, M. W.....Cloquet
Purdy, G. H.....Mason City, Iowa
Putnam, S. W.....New Rockford, N. D.
Quammen, Christian.....Montevideo
Randall, F. L.....St. Cloud
Ramsden, J. W.....Homer
Radabaugh, A. C..2438 24th Av. S., Mpls.
Ray, Mrs. J. W.....2628 Portland, Mpls.
Ramer, P. B.....Canton
Rasoff, Herman.....Essig
Ramlo, H. T.....Mabel
Ramsett, K. P.....Fingal, N. D.
Redpath, Thos.....Wayzata
Reid, E. W.....St. Paul
Reasoner, J. M.....New Brighton
Reed, A. H.....Glencoe
Rentz, Fred J.....Morris
Reed, E. J.....Vernon Center
Revier, Chas.....St. Peter
Reisdorf, Adam.....Carver
Rendler, C. M.....568 Ohio St., St. Paul
Reeves, Vincent.....3410 N 2nd St., Mpls.
Regeimbal, Louis J.....Crookston
Reed, S. J.....Webster, S. D.
Redland, Wm. T.....Shelley
Reynolds, Dr. M. H.....St. Anthony Park
Rice, Alfred .....Pine City
Rice, George.....Madelia
Rice, F. O.....Northfield
Richard, David .....Eden Prairie
Richter, J. W.....Cheyenne, N. D.
Ring, Geo. W.....Blue Earth City
Riddle, H. J.....Preston
Richardson, Joseph .....Glencoe
Rieter, C. N.....Plainview
Rice, Carl J.....Peever, S. D.
Royal, Solon .....Wayzata
Rogers, W. P.....Excelsior
Roberts, S. J. L.....Pine City
Rowell, H. H. S...Care of Progress, Mpls.
Robertson, Prof. Wm..St. Anthony Park
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Rohann, Mrs. M. A..611 1st Av. S., Mpls.
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Robinson, W. H.....Lake Crystal
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Sahler, Emil .....Waseca
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Terry Alfred.....Slayton
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Trow, A. W.....Glenville
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Underwood, Roy.....Lake City
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Wright, R. A.....Excelsior

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Coleman, N. J.....St. Louis, Mo.
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LIFE MEMBERS DECEASED IN 1904.

Ford, L. M.....San Diego, Cal.
Manning, J. W.....Reading, Mass.

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